A STUDY ON MATERNAL AND PERINATAL OUTCOME IN PROGRAMMED LABOUR

Dissertation submitted to

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

In partial fulfilment of the regulations for

the award of the degree of

OBSTETRICS AND GYNAECOLOGY

M.D. BRANCH – II

THANJAVUR MEDICAL COLLEGE,

THANJAVUR – 613 004.

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CHENNAI – 600 032.

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CERTIFICATE

This is to certify that this dissertation entitled "**A STUDY ON MATERNAL AND PERINATAL OUTCOME IN PROGRAMMED LABOUR"** is a bonafide original work of **Dr. M.AJEETHA BANU** in partial fulfilment of the requirements for M.D Branch –II (Obstetrics and Gynaecology) Examination of the Tamilnadu Dr.M.G.R. Medical University to be held in APRIL - 2013. The period of study was from December 2011 to August - 2012.

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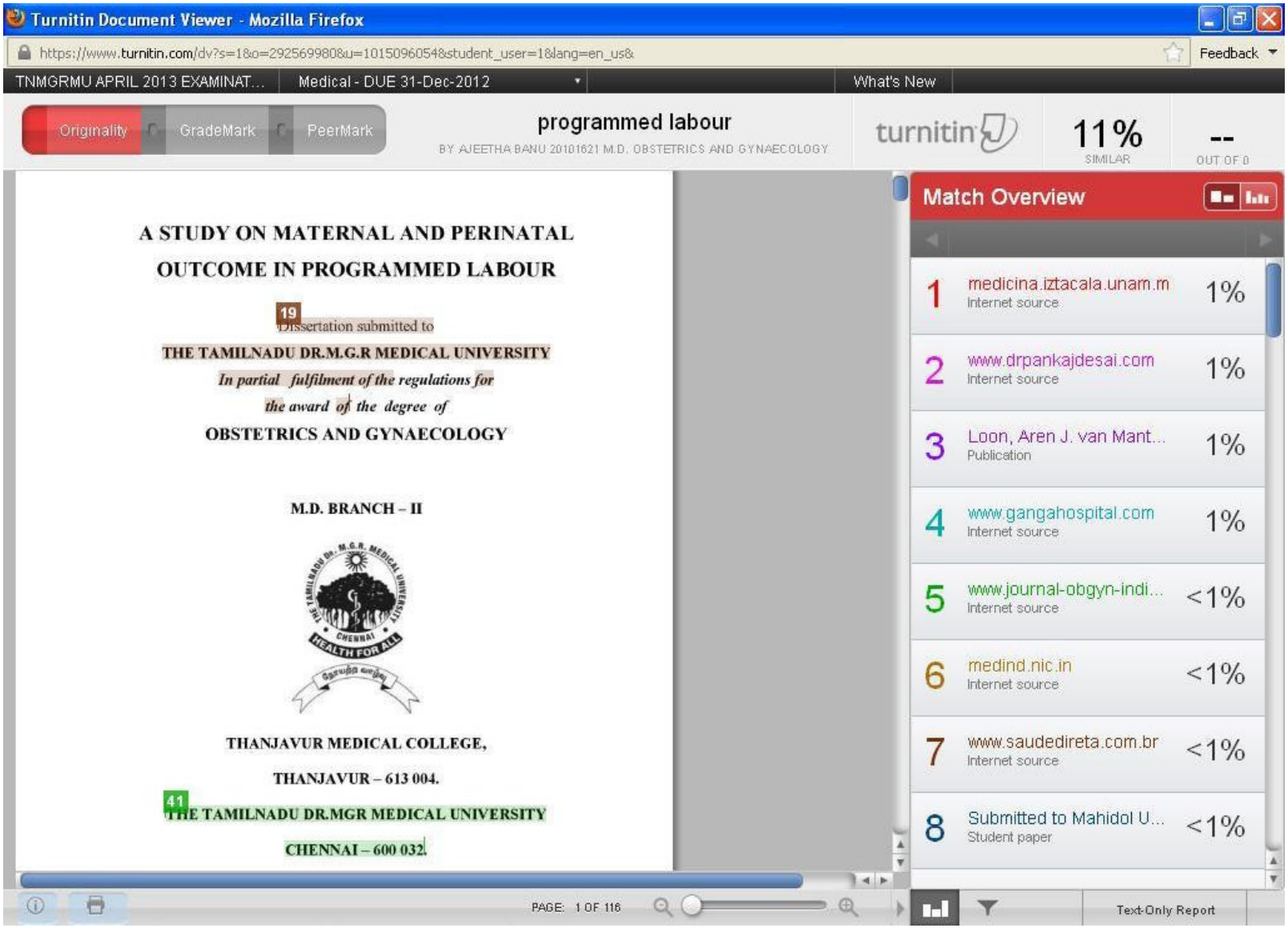
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DECLARATION

I, **Dr. M.AJEETHA BANU**, solemnly declare that dissertation titled **"A STUDY ON MATERNAL AND PERINATAL OUTCOME IN PROGRAMMED LABOUR"** is a bonafide work done by me at Thanjavur Medical College, Thanjavur between December 2011 to August - 2012 under the guidance and supervision of our beloved **Dr.S.SWARUPARANI, M.D., DGO.,** Department of Obstetrics and Gynaecology, Thanjavur Medical College, Thanjavur.

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ABSTRACT

Background and objectives:-

Objective of the study is to compare the effects of programmed labour protocol with the conventional labour protocol with regards to

Adequacy of pain relief

Duration of labour

Blood loss

Maternal and neonatal adverse effects.

Material and methods:-

This was a prospective, monocentric clinical trial. Total of 300 women who attended Raja Mirasudhar Hospital, Thanjavur were included in the study. All were low risk gravid women. After they fit into the inclusion criteria, protocol of programmed labour was implemented on them as developed by Daftary SN etal and the labour outcome was studied. Partogram was plotted for all patients recommended by WHO.

Results:-

In the study group 4.7% had outlet forceps delivery and 4% had caesarean section. Of the study group 26% had excellent pain relief as compared to 0% in control group. The mean rate of cervical dilation was 3.71cm/Hr in the study group and 1.53cm/Hr in the control group. The mean

duration of active phase 1st stage, 2nd stage, 3rd stage of labour were 116.95mins, 21.23mins, 4.36mins respectively in the study group as compared to this 236.44mins, 23.57mins, 4.83mins respectively in the control group. Maternal and fetal outcome were comparable in both groups.

Conclusion:-

Programmed labour protocol provides adequate labour analgesia, augments the process of labour thereby shortens the duration of labour reduces blood loss during labour without adverse maternal and fetal effects.

Key words:-

Programmed labour; Labour analgesia; Partogram.

INTRODUCTION

On recognition of the hard work that the parturient as well as the myometrium have to perform in order to deliver the fetus, human parturition has been termed as labour.

Onset of regular, effective, painful, uterine contractions leading to progressive effacement and dilatation of the cervix, resulting in the expulsion of the fetus, placenta and the membranes is known as labour.

These uterine contractions causing ischemia of myometrium is perceived as pain.Women seek assistance when they give birth. Midwifery or obstetrics is the 'oldest profession'[1]. Stress of the labour together with the labour pains exhausts the mother and prolongs the labour. When there is no medical contraindication, maternal request is enough to provide labour analgesia[2].

Ether was first used for pain relief in surgery by Morton in 1846. Obstetricians in United Kingdom used anaesthetic drugs for pain relief in labour. Dr. John Snow and Dr. James Young Simpson were the pioneers in this area. There were controversies, one group for and another group against labour analgesia. Detractors argued that it was violating God's decree and were a dangerous adjunct for labour.

The first woman anesthetized for child birth was Fanny Longfellow in 1847 for her third childbirth [3]. Henry Wadsworth Longfellow administered the ether for his wife. Fanny Longfellow wrote,

"I had it for the good of every woman as no woman will have to suffer much pain. I'm sorry you all will think that I'm so naughty in trying ether. This is the greatest blessing of our age."

Labour analgesia became popular only after Snow gave chloroform to Queen Victoria for her 8th childbirth in 1853.

Dr. Oscar gave spinal cocaine to six parturient in their 2nd stage of labour for pain relief in 1900. That was the first documented regional anaesthesia in obstetrics.

Dr.Hopkins did his first caesarean section using spinal anaesthesia in 1902 in the united states. Dr. Eugen Abuel reported his successful story of using epidural analgesia for a patient throughout her labour, the first such application in obstetrics.

Pain relief during labour is need of the hour. The International Association for the study of pain (IASP) declared 2007-2008 as the "Global year against pain in women – Real Women, Real Pain'. Although epidural analgesia is excellent at pain relief, it demands technical expertise.

Programmed labour was developed by researchers to provide pain relief without adverse maternal and neonatal side effects. It includes judicious use of labour inducers, analgesics, antispasmodics and partogram. Partogram is used to monitor the progress of labour and to identify the dysfunctional labour earlier and to intervene at an appropriate time.

This study was undertaken to compare the maternal and neonatal outcome of programmed labour protocol with the conventional labour.

AIMS AND OBJECTIVES

Objective of the study is to compare the effects of programmed labour protocol with the conventional labour protocol with regards to

Adequacy of pain relief

Duration of labour

Blood loss

Maternal and neonatal adverse effects.

REVIEW OF LITERATURE

PHYSIOLOGY OF LABOUR

Series of events that take place in the genital organs in an effort to expel the products of conception into the outer world is called as labour.

CASUATION OF LABOUR

Exact trigger is not known-fetus or mother or both. Postulates are the loss of pregnancy maintenance factors and the synthesis of factors of labour inducers

- ❖ Uterine distension
- ❖ Feto-placental endocrine cascade
- ❖ Hormones

Uterine distension

Mechanical stretching effect on the myometrium by growing fetus and amniotic fluid increase the gap junction proteins –connexin 3, as well as the oxytocin receptors. Increased incidence of preterm deliveries in multifetal gestation and hydramnios can be attributed by this hypothesis.

Feto-maternal endocrine cascade[4]

Human labor at term is a multifactorial physiologic event involving an integrated set of changes within the maternal tissues of the uterus (myometrium, decidua, and uterine cervix), which occur gradually over a period of days to weeks. Such changes include but are not limited to

- An increase in prostaglandin synthesis and release within the uterus
- An increase in the myometrial gap junction formation
- Up-regulation of myometrial oxytocin receptors.

Once the myometrium and cervix are prepared, endocrine or paracrine-autocrine factors from the fetoplacental unit bring about a switch in the pattern of myometrial activity from irregular to regular contractions.

The fetus may coordinate this switch in myometrial activity through its influence on placental steroid hormone production, through the mechanical distention of the uterus and through the secretion of neurohypophyseal hormones and other stimulators of prostaglandin synthesis. The final common pathway toward labor appears to be the activation of the fetal HPO axis and is probably common to all viviparous species.

HORMONES

OESTROGENS

Oestrogens increase the excitability of the myometrial cell by decreasing their resting membrane potential. It stimulates the production of connexion-43 gap junction protein. It also stimulates the prostaglandin synthesis. Estrogen increases the oxytocin receptors and also sensitises the uterus for oxytocin to act.

PROSTAGLANDINS

It constitutes the final common pathway for the onset of labour. Its synthesis is stimulated by rise in estrogen, cortisol, uterine distension, increase in cytokines,(IL-6,TNF), infection, vaginal examination, separation or rupture of membranes. Gap junctions formation are enhanced by it.

OXYTOCIN

It is the major stimulus for the initiation of labour. Oxytocin receptors are higher in early labour than in advanced labour. The release of prostaglandins from the decidua is promoted by oxytocin.

PHASES OF PARTURITION[5].

Parturition requires multiple transformations in both uterine and cervical function. It is divided into 4 overlapping phases.

Phase 1: Uterine quiescence and cervical competence.

Uterine muscle is kept unresponsive to natural stimuli and the ability of the myometrium to contract is held in abeyance. This phase comprise 95% of the pregnancy.

Phase 2: Phase of Activation: preparation for labour

It occurs during the last 6-8 weeks of pregnancy. Phase 2 is called uterine awakening / activation. Myometrial changes prepare it for labour contractions. Shift of phase 1 to phase 2 results from the alteration in the expression of contraction associated proteins (CAP) like oxytocin receptor, prostaglandin F receptor, and connexion 43. This increases the sensitivity to uterotonins and uterine irritability.

Cervix undergoes extensive remodelling for the transition from the softening to the ripening phase. Collagen fibrils are disorganised and the space between the fibrils increased in cervical ripening. Dermatan sulphate and chondroitin sulphate are replaced by hyaluronic acid, which imbibes water. Collagenases and leucocyte elastase decreases the collagen content of the cervix.

Phase 3: Process of labour: Phase of Stimulation

Third Phase is synonymous with the active labour and is divided into 3 stages of labour. I stage is the stage of cervical effacement and dilatation.

II stage is the stage of fetal expulsion. III stage is the stage of placental separation and expulsion.

Phase 4: Puerperium

Uterine involution occurs in phase 4. Uterus remains in a state of persistent contraction and retraction immediately after delivery and for an hour or so. Larger uterine vessels are compressed and thrombosis of their lumen occurs, thereby postpartum haemorrhage is prevented. Oxytocin facilitates maternal-type behaviour pattern and compression of uterine vessels. Uterine involution and cervical repair follow in a timely fashion.

Stages of labour

Prelabour or preparatory stage

- Lightening or falling forward of the uterus occur.
- Cervical canal undergo shortening gradually
- False pains frequently occur

Stage I : Begins with the onset of true labour pains to full cervical dilatation

Three functional divisions of I stage of labour are:

Preparatory division

Dilatational division

Pelvic division

Preparatory division

Components of the cervical connective tissue undergo changes considerably. Cervical dilatation is little. Sedation and analgesia can arrest this division of labour.

Dilatational division

Dilatation of cervix proceeds rapidly. This division is unaffected by sedation or analgesia.

Pelvic division

It commences with the deceleration phase of cervical dilatation. Cardinal movements occur during this division.

Two phases of cervical dilation are,

i) Latent Phase - Corresponds to preparatory Division

ii) Active Phase - Corresponds to dilatation division

Latent Phase

Begins with the onset of regular uterine contraction and ends with the cervical dilatation of 3-5cm. Latent phase > 20 hr in primipara and > 14 hr multipara is defined as prolonged latent phase.

Active phase: It is further divided into 3 phases

1. Acceleration Phase
2. Phase of maximum slope
3. Phase of Deceleration

	Primi	Multi
Mean duration	4.9 hr	2.5 hr
Rate of Cx dilatation	1.2 cm/hr	1.5 cm/hr

II stage:

It begins with the full dilatation of the cervix to the delivery of the fetus. It has 2 phases.

Propulsive phase

Expulsive Phase

III stage of labour

It is the interval between the delivery of the fetus to the delivery of the placenta & membranes.

Duration of III stage in 5-15 min

IV stage

Following the delivery of the placenta, 1st hour of the Pueperium is known as the 4th stage of labour. Vitals are monitored (BP, Pulse) every 15 minutes to identify any postpartum haemorrhage at the earliest.

Active Phase Disorders

Active phase problems are divided into protraction disorder and arrest disorder by Friedman. Protraction is defined as the slow rate of cervical dilatation of <1.2cm per hour for nullipara and <1.5cm per hour for multipara or slow rate of fetal descent of <1cm per hour and <2cm per hour for nullipara and multipara respectively. Arrest of dilatation is defined as the complete cessation of dilatation for 2 hours, and arrest of descent as no fetal descent for 1 hour.

ACTIVE MANAGEMENT OF LABOUR[6,7]

To reduce the duration of labour and for earlier identification of dysfunctional labour, active management of labour concept was first implemented by O' Driscoll and colleagues at the National maternity hospital in Dublin in 1968.

Active Management of labour includes patient education, a disciplined approach to labour diagnosis and management, indications for intervention and review of the outcomes.

The goal is to achieve efficient uterine contractions thereby shorten the duration of labour to affect spontaneous delivery in primigravida[6]. Components of active management of labour are

Organizational component

Medical component.

A.ORGANIZATIONAL COMPONENTS

a. Antenatal education regarding birthing process and approach to labour on admission.

b. Daily physician assessment of all patients.

c. Bedside support and supervision to ensure labour progression and to provide emotional support to patient and families.

d. Peer review of effectiveness of the system.

B.MEDICAL COMPONENTS

a. Rigid inclusion criteria:

Only low risk term gravid women with cephalic presentation are actively managed.

b. Strict diagnosis of labour:

Labour is defined as onset of regular painful uterine contractions with any one of the following,

a) Complete effacement of the cervix

b) Bloody show

c) Ruptured membranes

c. Early Amniotomy

It is done to assess the volume & liquor colour, if liquor is scanty (or) meconium stained, intense surveillance is made and is not eligible for augmentation with high dose oxytocin.

d. Ensuring labour progression by using partogram.

e. High dose oxytocin

High dose oxytocin is used to correct dystocia at 6 mIU per minute, increased every 15mt to maximum 40 mIU per minute till there are 3-5 contractions per 10 minutes.

Wei S et al[8] (2012) concluded that when early amniotomy and early oxytocin were used, there was modest decrease in the caesarean section rate when compared with standard care.

Jose et al[9] (1992) in his study of active management of labour observed that there are no serious maternal or neonatal adverse effects while dystocia was reduced with the resultant increase in spontaneous vaginal delivery.

Pattinson et al [10](2003) in his study on aggressive management of labour, he used single line partogram and oxytocin was started when the line was crossed. He observed reduced caesarean section rate in nulliparas but there is need for intensive monitoring.

Labour Pain

The most severe pain the women experiences during her life time is the labour pain. It is influenced by emotional, motivational, cognitive, social and cultural circumstance[11]. Nulliparous women are more likely to experience severe pain than multiparous women.

Pain may be aggravated by anxiety, fear, maternal expectations and the mother's state of preparation for delivery. Maternal oxygen consumption, cardiac output and circulating catecholamine levels are increased. Increased serum catecholamine may cause fetal tachycardia, bradycardia or dysfunctional uterine contractions.

Anatomy of labour pain

I stage

- It is diffuse and poorly localised, cramping and visceral in nature.
- Uterine contractions and stretching of the cervix cause pain
- It can be blocked by paracervical plexus blockade.

II stage

- Somatic pain.
- Pain is sharp and localised.

This is due to the distension of the vagina, traction on pelvic structures, pelvic floor and the perineum.

Mechanisms of Pain

There are two types of pain transmitted from the female reproductive tract, visceral and somatic.

Visceral pain is caused by the distension of the cervix and the lower uterine segment. Sympathetic visceral afferents transmit sensation to various plexuses and then to the lumbar sympathetic chain. From the sympathetic chain, impulses pass into the spinal cord through the tenth, eleventh, and twelfth thoracic and the first lumbar nerves. These must be blocked to gain relief from pain during the first stage of labour. Sensation, from the cervix is also transmitted via parasympathetic afferents along the second, third and fourth sacral nerves.

Somatic afferents transmit sensation from the vagina and the perineum in the later stages of labour. Impulses pass to the spinal cord via the pudendal nerve to the second, third and fourth sacral nerves.

Proposed theory:

a. Hypoxia of the contracted myometrium
b. Interlocking muscle bundles cause compression of nerve ganglia in the cervix and lower uterus
c. Inflammatory changes of the uterine muscles.
d. Stretching of the peritoneum overlying the fundus.
e. Stretching of the cervix during dilatation.

Peripheral pathways:

- Nerve supply of the uterus involves T11, T12, frequently T10, L1 and L2 Segments.
- Cervix supplied by the S2, S3 and S4.
- The pain caused by stretch of the birth canal was transmitted through “sacral segments”
- The pain from lower uterine segment and cervix is transmitted through the pelvic nerve and the S2, S3 and S4 spinal segments.
- Nociceptive afferents → lumbar sympathetic chain → lower thoracic sympathetic chain which they leave by the rami communicantes associated with T10-L1 → pass through the

posterior roots of these nerves to make synaptic contact with inter neurons in the dorsal horn.

- During latent phase, pain is limited to T11 and T12 dermatomes.
- As labour progresses to the active phase and uterine contractions become intense the pain in T11 and T12 dermatomes become severe and spreads to the adjacent T10-L1 dermatomes.
- The distribution of T10-L1 dermatomes in the back overlies the lower three lumbar vertebra and the upper half of sacrum.

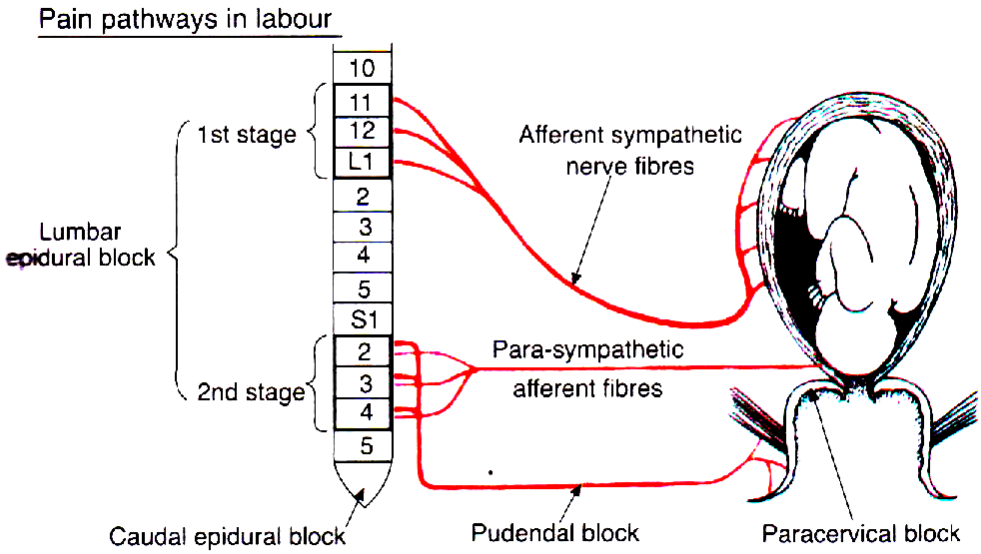
Second and third stage of labour :

- The amount of nociceptive stimulation decreases.
- Contractions of the uterus and distension of lower uterine segment continue to cause pain.
- In addition pressure of the presenting part on pain sensitive structures in the pelvis and distension of the outlet and perineum become new sources of pain.
- Progressively greater distension causes intense stretching, tearing of fascia and pressure on skeletal muscles of the perineum.

❖ Perineal pain is sharp and localized to the regions supplied by the pudendal nerves.

In the late part of the first stage and during the second stage, the parturient develop aching and cramping discomfort in the thigh due to stimulation of pain sensitive structures in the pelvic cavity including

- ➢ Traction on the pelvic parietal peritoneum and the structures it envelops including uterine ligaments.
- ➢ Stretching and tension of bladder, urethra and rectum.
- ➢ Undue pressure on one or more roots of the lumbosacral plexus.



The thought of labor produces fear and anxiety in the women. Labour pain is associated with increase in cortisol, ACTH, epinephrine, nor-epinephrine and endorphins, which produce maternal exhaustion and uteroplacental insufficiency leading on to fetal distress. Duration of the labour is prolonged.

To alleviate the women of her sufferings, various labour analgesics have been tried.

LABOUR ANALGESIA

An ideal analgesic technique should therefore take into consideration maternal wishes and preferences, available expertise, support staff and facilities. Practices in various countries may vary from culture to culture.

The technique used should be cheap, easy to administer, produce good and reliable relief from pain, but not impair consciousness or cooperation. It should be nontoxic to mother and fetus and should not produce cardio respiratory depression in the fetus. The technique must have no tocolytic action and should not delay labour.

NON PHARMACOLOGICAL METHODS

They are noninvasive and safe but their efficacy is unproven[16]. Attempts to minimize the pain of labour non – pharmacologically first began in the early twentieth century.

Natural childbirth was pioneered by Grantly Dick – Read in 1932. He suggested that the pain of childbirth was brought about by fear and tension and recommended passive muscle relaxation to reduce the pain.

Psychoprophylaxis is a technique which involves educating the mother about the functioning of her body and the physiology of labour. It originated in Russia and was later popularized in France by Lamaze (Lamae 1958). The aims of psychoprophylaxis were similar to those of natural childbirth but directed at blocking pain impulses from the uterus and perineum by conditioned reflexes. The establishment of conditioned reflexes involved an intensive training period. Unlike dick – Read, Lamaze did not rule out the use of analgesics in labour. Leboyer (1975) advocated a modification of natural childbirth and advised delivery in a dark and quiet place, with massage of the newborn and a warm bath for baby shortly after delivery. He claimed that this technique produced a happier and healthier neonate.

Studies on these methods have shown mixed results, with some researchers finding that they resulted in decreased analgesic requirements, shorter labours and lower instrumentation rates. Others however found no differences from control groups.

Other techniques include simple emotional support from the patient's partner or another labour companion, touch and massage, the application of hot or cold compresses, hydrotherapy and adoption of the vertical position. This last technique includes ambulation during early labour, use of the squatting position or a birthing chair, and may aid maternal comfort.

Some techniques require extensive preparation and antenatal training. These include biofeedback, acupuncture, hypnosis and transcutaneous electrical nerve stimulation (TENS).

TRANS CUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)[15]

2 pairs of electrodes were placed on either side of the vertebral column about 2 cm over the T10–L1 dermatomes and over S2-S4 dermatome to provide analgesia for the first stage of labour and second stage of labour respectively. Local release of ß-endorphin and the blockade of pain transmission to the brain through stimulation of A-fibre are suggested theories for TENS analgesia.

In the comparative study of TENS versus tramadol in labour analgesia by Thakur Ratna and Patir Reka[17] (2004), TENS had pain relief as good as tramadol with little side effects.

MASSAGE

Massage can be provided by anyone at anytime.

Smith et al[18] (2012) reported less pain during labour from massage when compared with usual care.

BREATHING AND RELAXATION TECHNIQUE

Smith et al [19] (2012) observed pain intensity during the latent phase and the active phase of labour were reduced with relaxation when compared with no treatment. Assisted vaginal deliveries were reduced, with increased satisfaction with pain relief.

ACUPUNCTURE

Acupuncture needles are inserted into the skin and manipulated manually or passing low dose current to get pain relief. Analgesia is mediated through release of serotonin and encephalin or release of endorphins. Pain relief achieved is inconsistent and unpredictable.

Non pharmacological agents are indicated in women refusing pharmacological agents in pregnancy but seeking for pain relief .These methods have little side effects but efficiency of pain relief is poor and unpredictable

PHARMACOLOGICAL METHODS OF LABOUR ANALGESIA

Systemic	Regional
1. Inhalational methods 2. Systemic analgesics **Opioid analgesics** (Meperidine, Morphine, Fentanyl, sufentanil, Alfentanil, Remifentanil) ❖ Agonist- antagonist analgesics (Nalbuphine Butarphanol, Tramadol) **Non opioid analgesics** ❖ Sedatives tranquilizers (Barbiturates, Phenothiazine derivatives, Benzodiazepines) ❖ Dissociative or amnesic drugs (Ketamine, Scopolamine)	1. Epidural analgesia-lumbar 2. Combined spinal epidural 3. Continuous labour analgesia 4. Lumbar sympathetic block 5. Alternative regional anaesthetic techniques Pudendal block. Para cervical block.

PHARMACOLOGICAL AGENTS

On January 19, 1847 Sir James young Simpson first used ether and chloroform for labour analgesia.[3].

The most important consideration in pregnancy is that there are in fact two individuals receiving treatment : mother and baby.

Anesthetic requirements in the peripartum period include long periods of constant pain relief, and an increased depth of analgesia might be needed as labour progresses and pain increases. Instrumental delivery might necessitate even deeper levels of sensory blockade, and any analgesic technique used will have to accommodate a sudden need for expeditious delivery.

Inhalational agents:

Earlier ether, chloroform and methoxy flurane were used. They were used in subanaesthetic doses for labour analgesia maintaining consciousness. They readily cross the placenta and reach the equipotent concentration in fetus but rapidly excreted through fetal lungs.

Ether has pungent odour and is irritant to the respiratory tract. It has strong emetic effect. It is explosive and cannot be used in modern times as electrocautery is extensively employed. Chloroform produces arrhythmias and liver damage.

Nitrous oxide is a colourless, odourless non irritating gas but a low potent anaesthetic. As it is not metabolized in the body and removed by the lungs from the body, it is non toxic to brain, kidney and liver.

Entonox is 50% nitrous oxide with oxygen. On inhalation it produces analgesia within 20-30 seconds with maximum effect after 45 seconds. Limitations for its use are technical difficulties in administration, scavenging and theatre pollution.

Klomp et al[20] (2012) reviewed 26 studies and reported that nitrous oxide have more side effects when compared with flurane derivatives or no treatment. Flurane derivates had better pain relief than nitrous oxide in first stage of labour.

PARENTAL OPIOIDS

Opiates help the patient to tolerate pain better, but do not provide total analgesia. Opioids can be given orally, intramuscularly, intravenously or subcutaneously, either as intermittent boluses or continuously as an infusion or via a patient – controlled analgesia pump. This last technique generally provides good analgesia at lower analgesic dosages, and gives great patient satisfaction.

Maternal side effects include nausea, vomiting, drowsiness, decreased gastric emptying, respiratory depression and dysphoria.

Fetal effects include respiratory depression at birth, and decreased baseline variability in the fetal heart rate.

Ullman et al[21] (2010) Cochrane reviewed 54 studies and concluded that parental opioids have more adverse effects though they have pain relief. Maternal satisfaction with parental opioids is moderate. There was no clear evidence of adverse effects of opioids on the newborn.

Epidural anaesthesia

Epidural analgesia provides the most effective form of pain relief devised so far for labour and delivery. The mother is conscious and can participate in the birth process. Advantages:-

- Good analgesia is achieved throughout the labour.
- As she is conscious airway in maintained, and able to interact with others and with her baby immediately after delivery.
- Postpartum exploration and episiotomy repair can be easily performed.

Levels of maternal catecholamine are lowered, which may result in improved uteroplacental perfusion and better uterine contractility. The hyperventilation due to pain is reduced, limiting the leftward shift of the oxygen dissociation curve caused by hypocarbia.

If labour does not progress satisfactorily and a caesarean section becomes necessary, epidural analgesia can be converted to an anesthetic by deepening the sensorimotor block. Post – operative pain can also be addressed by leaving the catheter in situ and giving epidural opiates, alone or with a local anesthetic infusion of low concentration (for example, 0.25% bupivacaine or lower).

Fetal benefits include lack of the respiratory depressant effect of parenteral opioids, and less fetal hypoxia and acidosis.

Limitations of epidural analgesia in labour include the consequences of autonomic blockade and hypotension, a possible dural tap leading to post dural puncture headache, missed segments, and high and total spinal blockade. Motor blockade is another significant problem.

Epidural analgesia provides effective pain relief but at the cost of increased instrumental deliveries

Epidural analgesia mandates the service of trained anaesthesiologist. Developing countries like India, where it is not possible to provide epidural analgesia for all, programmed labour is a safe alternate option which can be provided by the attending obstetrician herself.

Anim-somuah M and Smyth R[22](2011) Reviewed 21 studies comparing Epidural with any form of pain relief or no pain relief in labour concluded that Epidural analgesia is effective in pain relief in labour but at

increased risk of instrumental delivery. It has no impact on risk of LSCS and long term backache.

Combined spinal epidural

In this technique spinal anaesthesia is provided through epidural needle. It is known as walking epidural. The patients have rapid onset of pain relief and profound analgesia lasting for 120 minutes and does not have motor blockade. Once the spinal block effect wanes, analgesia can be provided with the indwelling epidural catheter.

Paracervical Block

Frakenhauser ganglion, which is lying posterolateral to cervicouterine junction is blocked by paracervical block. It is used for pair relief only is first stage of labour. It does not affect the progress of labour. It is used rarely.

Pudendal Block:

In pudendal block, the pudendal nerve is blocked before its division. The sensory innervations of the lower vagina, vulva, perineum and the motor innervations of perineal muscles and the external anal sphincter are carried by the pudendal nerve. It is used for satisfactory vaginal delivery and outlet forceps delivery.

Novikova N and Cluver C[23] (2012) reviewed 41 trials and concluded that local anaesthetic nerve blocks are effective for management of pain in labour than placebo, opioid and non-opioid analgesia.

PROGRAMMED LABOUR[24]

Definition

It is an indigenously developed protocol by Shirish Daftary and his colleagues in 2003 for labour management.

Dual objectives are

1. Providing optimum pain relief
2. Optimizing obstetric outcome to reach the goal of safe motherhood.

Programmed labour incorporates the 3 principles of active management of labour advantageously. Pain relief is given utmost importance in programmed labour.

Concept of programmed labour rests on 3 piliars (Daftary etal 1993)

1. Ensuring adequate effective uterine contractions

   Active management of labour

2. Providing pain relief

   Use of analgesics and antispasmodics

3. Close monitoring of labour events

   Using partograph

Benefits of pain relief

1. As the fear and anxiety in the mother is relieved, uteroplacental circulation is maintained thereby baby is protected against hypoxia.
2. Maternal exhaustion is prevented by providing adequate rest and sleep.
3. As the cervical dilatation is facilitated, duration of the labour is shortened.
4. Less operative deliveries and cervical tears.
5. As the duration of labour is shortened, intrapartum infections are reduced.

DRUGS USED IN THE PROGRAMMED LABOUR PROTOCOL

1. Injection oxytocin 2.5 U in RL(augmentation of labour).10 U IM for active management of third stage of labour
2. Injection pentazociine 6mg in dilution slow IV
3. Injection tramadol 1mg/kg body weight IM
4. Injection Diazepam 2mg in dilution slow IV
5. Injection Drotaverine hydrochloride 40mg IM, every 2 hours (maximum 120mg).
6. Injection Ketamine 0.25 mg/kg body weight in dilution slow IV

OXYTOCIN[25,26]:

It comes under category B

Oxytocin is a nana peptide which is structurally similar to vasopressin. It was discovered by Sir Henry Dale in 1906. It was the first polypeptide to be synthesized and sequenced. In 1909, first pituitary extract was used in labor.

Sensitivity and the number of oxytocin receptors increases in the uterus near term. G- Protein coupled oxytocin receptors mediates the response by phosphoinositide hydrolysis and IP_3 mediated intracellular release of calcium ions and depolarization of muscle fibers and influx of calcium ions.

Oxytocin relaxes the lower uterine segment and increases the contractility of fundus and body of the uterus. Contractile response is contributed by the prostaglandin whose synthesis and release by the endometrium and decidua is increased by oxytocin.

At higher doses basal tone increases, which at lower doses, uterus relaxes in-between the contractions.

Side effects

maternal hypotension

reflex tachycardia

water intoxication can occur when large doses are given along with IV fluids.

Fetal bradycardia and fetal heart rate decelerations can occur.

Dosage

2.5 units in Ringer Lactate as infusion- for augmentation during labour

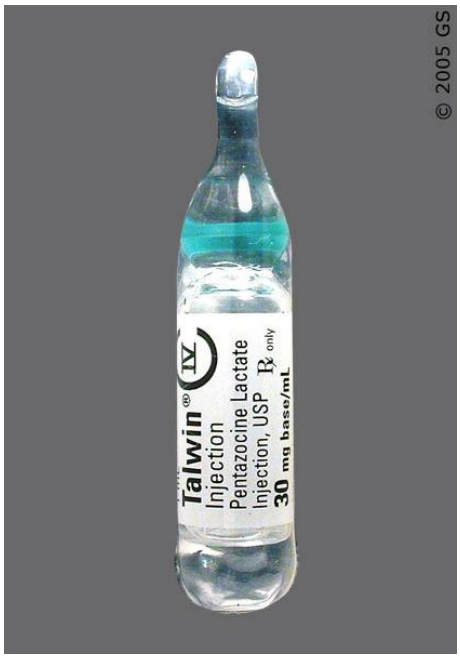
10 units intramuscularly after delivery

Buqq GJ, Siddiqui Fand Thornton JG[27](2011) included eight studies in Cochrane database systemic review for comparing oxytocin with no treatment.

They concluded that the use of oxytocin was associated with the reduction of duration of labour. It does not decrease the caesarean rate.

Mori et al[28] (2011) observed that high dose oxytocin at starting and incremental dose of equal to or more than 4 MU per minute was associated with a significant increase in spontaneous vaginal birth and reduction is duration of labor and caesarean section.

PENTAZOCINE



Pentazocine is a benzomorphan derivative, which comes under Category C. Pentazocine is a complex action opioid with marked "κ' Kappa

receptor agonist and μ receptor weak antagonist. It is the first analgesia to be used with agonist and antagonist action.

Though it undergoes extensive metabolism (oxidation and glucoronide conjugation) in the liver, it is orally effective. Onset of action is within a minute when given intravenously and lasts for 4-6 hours and excreted in urine. Half life of the drug is 3-4 hours.

Dosage

30 mg intramuscularly

In our protocol, we use 6 mg pentazocine diluted with distilled water and given slowly intravenously.

Side Effects

Maternal hypertension

Tachycardia

Sedation

Dizziness

Sweating

Vomiting

Fetal respiratory depression occurs at doses higher than 30 mg.

Elbourne D and Wiseman RA[29] (2000) observed pentazocine and pethidine had similar pain relief and maternal satisfaction with pentazocine having less nausea and vomiting.

TRAMODOL

Tramadol is a Category C drug.

It is a centrally acting synthetic opioid analgesia relieving pain by opioid as well as other mechanism. It has very low affinity for Kappa receptors and low affinity for μ opioid receptor. It activates monoaminergic spinal inhibition of pain by inhibiting the reuptake of nor epinephrine and serotonin. It is metabolized in the liver. Half life of the drug is 3-5 hours and its duration of action is 4-6 hours.

Dosage

50-100 mg oral /slow IV/IM. 4-6 hourly (1 mg/kg).

Side Effects

Dryness of the mouth

Nausea

Dizziness

Sleepiness

Sweating

Neonatal depression occur at large repeated doses.

Nagaria T and Acharya J[30] (2006) when comparing tramadol and pentazocine for pain relief in labour observed that both drugs had no significant changes in fetal heart rate pattern or maternal cardio respiratory depression. Tramadol group had shortened duration of 1st stage of labour than that in pentazocine group.

Suvonnakote et al[31] (1986) and viegas et al[32] (1993) observed that, neonate in the tramadol group has lower respiratory depressant effect than that in pethidine group.

Tramadol, though an opioid analgesic, is safe for the mother and her baby and provide adequate pain relief with an additional effect of reducing the duration of labour.

DROTAVERINE HYDROCHLORIDE

This novel anticholinergic drug, smooth muscle antispasmodic comes under category B of FDA classifications. It is an isoquinolone derivative with the potent spasmolytic property. It inhibits the enzymes phosphodiesterase IV, which is turn increase cAMP and cGMP to produce in the liver with half of the drug excreted unchanged in the urine.

Dosage

40 mg oral / IV. Maximum 120mg.

Side Effects

Headache

Dizziness

Flushing

Hypotension (intravenous injection)

Constipation

Nausea

Tachycardia

Dryness of the mouth

It is safe for the fetus.

Roy et al[33] (2007) noted that Drotaverine hastens the cervical dilatation and thereby reduces the duration of active phase of I stage of labour. Drotaverine reduces the cervical tears and traumatic postpartum hemorrhage.

Madhu et al [34](2010) observed that both valethamate and Drotaverine helps cervical dilatation and augments first stage of labour but not the second or third stage with Drotaverine having lesser adverse effects.

Sharma et al [35](2011) and Mishra et al[36] (2002) concluded similarly that drotaverine hastens cervical dilatation than valethemate with fewer adverse effects. It is safe for the baby.

Meena Thapa et al[37] (2007) differed slightly saying Drotaverine dilates the cervix rapidly in multigravida while in primigravida both Drotaverine and valethamate are equally effective in reducing the duration of labour.

Salma BN and Zaib-Un Haroon[38] (2011) observed phlorogulcinol hastens cervical dilatation and decreases the duration of labour when compared with drotaverine.

DIAZEPAM

Diazepam, benzodiazepine group is category B drug. It is first introduced around 1960 as anti anxiety drug; It also has hypnotic and anticonvulsant action. It acts by facilitating inhibitory GABAergic ($GABA_A$ receptors) transmission.

On slow intravenous injection, diazepam produces analgesia. It produces prolonged milder effect preceded by brief initial phase of strong action due to a 2 phase plasma concentration decay curve (distribution phase half-life 1 hour and elimination half life of 20-30 hours). It is due to the production of active metabolite.

Side effects

Drowsiness

Nausea

Vomiting

poor neonatal suckling reflex, sedation and hypotonia in the fetus.

KETAMINE

(2-[0-chlorophenyl] – 2 methylamino cyclohexane) It comes in the strength of 10mg, 50mg, and 100mg ketamine base per milliliter of sodium chloride solution containing benzethonium chloride as preservative.

In 1962 ketamine was synthesized by Stevens corssen. Domino in 1965 first used ketamine in humans. From 1970 it is in clinical use for surgical anesthesia, profound analgesia and rapid recovery with less prominent emergence reaction. Among the 2 isomers, dextro rotatory isomer is more potent but produces less stimulation of central nervous system and cardiovascular system.

Pharmacokinetics:

It is externally metabolized in the liver, first, it is demethylated to norketamine, then hydroxylated to hydroxynorketamine and finally undergoes glucoronide conjugation.

Peak plasma level is reached within 30 seconds to one minute on intravenous injection and within 5 minutes following intramuscular injection. It has distribution half life of 10minutes and elimination half life of 2 – 3 hours.

It is a hallucinogen, induces dissociative anesthesia. Concomitant activation of the limbic system and the depression of the thalamo neocortical pathway cause functional and electrophysiological dissociation are stated as dissociative anesthesia.

Dissociative anesthesia is characterized by profound analgesia, amnesia with light sleep, immobility and feeling of dissociation from one's own body and the surroundings. Ketamine is available as racemic mixtures.

It inhibits NMDA receptor noncompetitively and interferes with the transmission of pain in the spinal cord. It inhibits nitric oxide synthase. It is serotogenic and noradrenergic reuptake inhibitor.

Dosage

0.25mg/kg –Analgesia

0.5-1.5mg/kg - Anaesthesia

Side Effects

Hypertension

Bradycardia

Delirium

Hallucination

Hyper salivation

Altissimi C[39] (1979) observed that ketamine is nontoxic to the fetus and mother as tested with cardiotocography and blood gas analysis and suggested that ketamine is useful in labour analgesia.

ACTIVE MANAGENT OF THIRD STAGE OF LABOUR [40]

AMTSL is evidence based low – cost intervention for preventing PPH.

Routine use of active management of the third stage of labour is recommended by the International Federation of Gynaecologists and Obstetricians (FIGO) and the International Confederation of Midwives (ICM), as well as by WHO.

The FIGO–ICM definition

1. use of a uterotonic immediately following delivery of the fetus
2. Delayed cord clamping.
3. Controlled cord traction
4. Fundal massage immediately after delivery of the placenta, followed by palpation of the uterus every 15 minutes for 2 hours to assess the continued need for massage.

Oladapo OT etal[41] (2009) on comparing the outcome of third stage of labour in parturient who received AMTSL with those who did not, observed no significant difference among them.

Uterotonic drugs:

Cochrane systemic review compared oxytocin and syntometrine in active management of third stage of labour and concluded that syntometrine had higher side effects like vomiting, hypertension. No other significant differences in maternal outcome were observed.

In a Cochrane review comparing oral misoprostol with oxytocin for AMTSL showed that oral misoprostol had more blood loss and shivering and elevated body temperature. Despite this, it is useful in low resource setting.

Controlled cord traction: [42]

Maternal risks are

Uterine inversion

Cord separation.

In 5 major randomized controlled trials on AMTSL versus expectant management, cord separation or uterine inversion had not been recorded.

PARTOGRAM[43,44,45,46]

The basis for the scientific study of the progress of labour was developed by Friedman (1954), who described it graphically by plotting the rate of cervical dilatation against time.

The resulting graph of cervical dilatation forms the basis of modern partogram, which now incorporates many relevant parameters related to labour, like the condition of the mother and the fetus in relation to each other chronologically on one page. These parameters include cervical effacement and dilatation, the descent of the presenting part (in fifths of the head palpable above the pelvic brim rather than the station in cm above or below the ischial spines), fetal heart rate (FHR), the frequency and duration of uterine contractions, the colour and quantity of amniotic fluid, maternal parameters such as temperature, pulse and blood pressure, and drugs used.

The pictorial documentation of labour facilitates the early recognition of poor progress. Plotting of cervical dilation also enables prediction of the time of onset of the second stage of labour.

TYPES OF PARTOGRAPHS

1. WHO partographs
    a. Includes latent phase of 8 hrs and alert line starts at 3 cm dilatation and action line at 4 hrs to the right of alert line.
    b. Modified partograph in 2000 excluded the latent phase.
    c. Color coded Partograph
        i. Area left to alert – green – normal progress.
        ii. Right to action – red – dangerously slow progress.
        iii. Inbetween lines – amber – need for great vigilance.
        iv. Dilatation recorded and not descent.
2. Other Partographs
    a. Round partogram – not commonly used.

Second stage partogram – based on descent and position of fetal head.

MATERIALS AND METHODS

SUBJECTS:

This study was conducted in the Department of Obstetrics and Gynaecology, Raja Mirasudhar Hospital from December 2011-August 2012. 300 parturient women in their active phase of labour were included in the study.

Inclusion criteria:

- Age : 18-35 yeas
- Primigravida
- Gestational age : 37-41 weeks
- Singleton gestation
- Vertex presentation
- Clear liquor
- NST Reactive

Exclusion criteria:

- Elderly primi
- Cephalopelvic disproportion
- Medical complications in pregnancy
- Hydramnios / IUGR
- Multiple pregnancy
- Antepartum Hemorrhage
- Previous uterine surgeries

Methods of study:

Three hundred low risk parturient women satisfying the above criteria were included in the study. They were alternately allocated into 2 groups.

Group 1

150 women received programmed labour protocol.

Group 2

150 women were observed expectantly

The time when they entered into the active phase was marked as zero hour in the partogram. Partogram was plotted and progress of labour monitored in all the patients. Only liquid or semisolid diets were allowed to reduce nausea or vomiting.

Group 1: STUDY GROUP:

All women were started an intravenous line of Ringer lactate at the rate of 15 drops per minute. If the uterine contraction are not adequate, oxytocin 2.5Units in Ringer lactate infusion were started at the rate of 12 drops per minutes and increased every 15-30 minute to get effective uterine contractions (3-5 /10 minutes lasting 35-40 seconds)

1 ampoule of pentazocine 30mg in 1ml and 1 ampoule of diazepam 10mg in 2ml is diluted with 7ml distilled water to get diluents of 10ml. 2ml of the diluents containing 6mg injection pentazocine and 2mg of injection diazepam is given slowly intravenously. Injection Tramadol 1mg/kg (body) is given intramuscularly. Injection drotaverine hydrochloride 40mg is given intravenously. 2nd hourly drotaverine is repeated till full cervical dilatation to a maximum of 3 doses. Drotaverine helps cervical dilatation and also pain relief. Antispasmodic and analgesics are synergistic. Injection Tramadol have longer duration of action and it takes care of mild to moderate pain.

On 7-8 cm dilatation of cervix, injection Ketamine 0.25 mg/kg body weight diluted with distilled water is given slowly intravenously over 10 minutes. If needed injection ketamine is repeated after 30 minutes in the half of the above dose. 10 ml of 1% lignocaine is infiltrated locally before episiotomy if required. Injection oxytocin 10U IM is given within one minute of delivery of the baby, as per active management of III stage of labour. Blood loss is estimated by PPH drape/mop count.

Pain relief score was asked by rupees scale method

1. No pain relief : score zero
2. Mild pain relief: score one
3. Moderate pain relief : score two
4. Excellent pain relief: score three

Control group:

All women were started an intravenous line of Ringer lactate. If uterine contractions are inadequate, injection oxytocin 2.5U in 500ml of Ringer lactate is started at the rate of 12 drops per minute and titrated to achieve effective uterine contractions.

On delivery of the baby, 10 units of oxytocin injection is given intramuscularly within one minute as per Active management of III stage of labour. Blood loss is estimated.

Parameters studied are

Mean duration of all 3 stages of labour

1. Active phase of I stage
2. II stage
3. III stage

Mode of delivery

Pain relief score

Blood loss

Maternal outcome

Ability to cooperate at 2nd stage

Ability to feed her baby at 30 minutes

Maternal adverse effects

Maternal satisfaction score

Neonatal outcome

Birth weight

APGAR score at 1minute and 5 minute.

NICU admission.

RESULTS OF THE STUDY

TABLE: 1

AGE DISTRIBUTION

Age	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
Below 20yrs	26	17.3%	23	15.3%
21 to 25yrs	101	67.3%	100	66.7%
26 to 30yrs	23	15.3%	23	15.3%
31 to 35yrs	0	.0%	4	2.7%

The mean age of the patients in the study group and the control group is 22.91 years and 23.18 years respectively. In the study group the age of patients ranged from 18-30 years and in the control group from 18-34years. Majority of the women in the study and the control group were 21-25 years.

FIGURE:1

AGE DISTRIBUTION

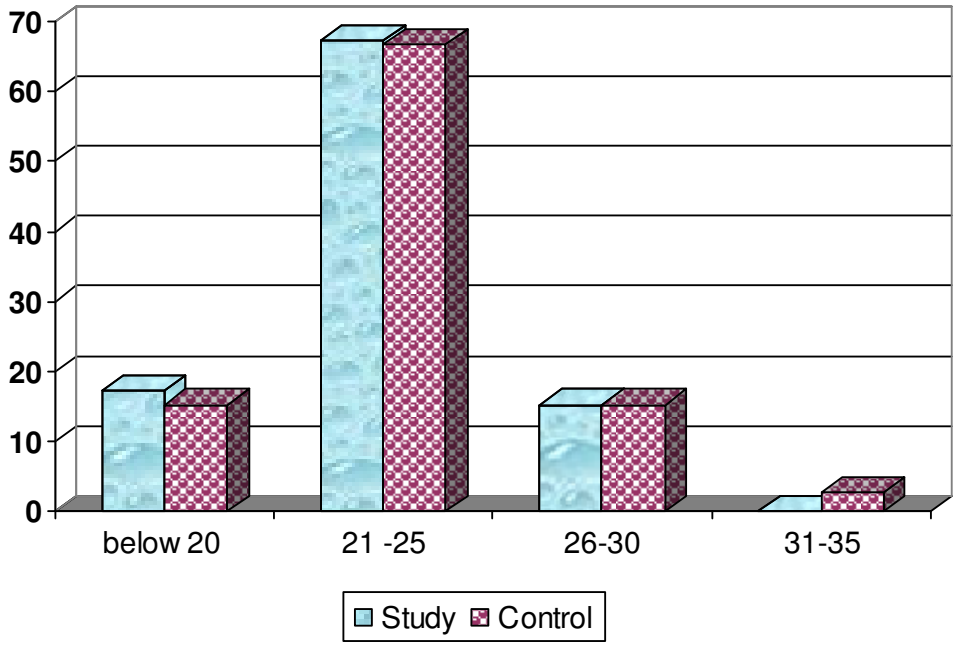


TABLE :2

GESTATIONAL AGE

GESTATIONAL AGE IN DAYS	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
259 to 266	40	26.7%	39	26.0%
267 to 273	46	30.7%	47	31.3%
274 to 280	43	28.7%	38	25.3%
281 to 287	21	14.0%	26	17.3%

Mean Gestational age of the patients in the study group and control group were 272.73 and 272.93 days respectively.

FIGURE:2

GESTATIONAL AGE

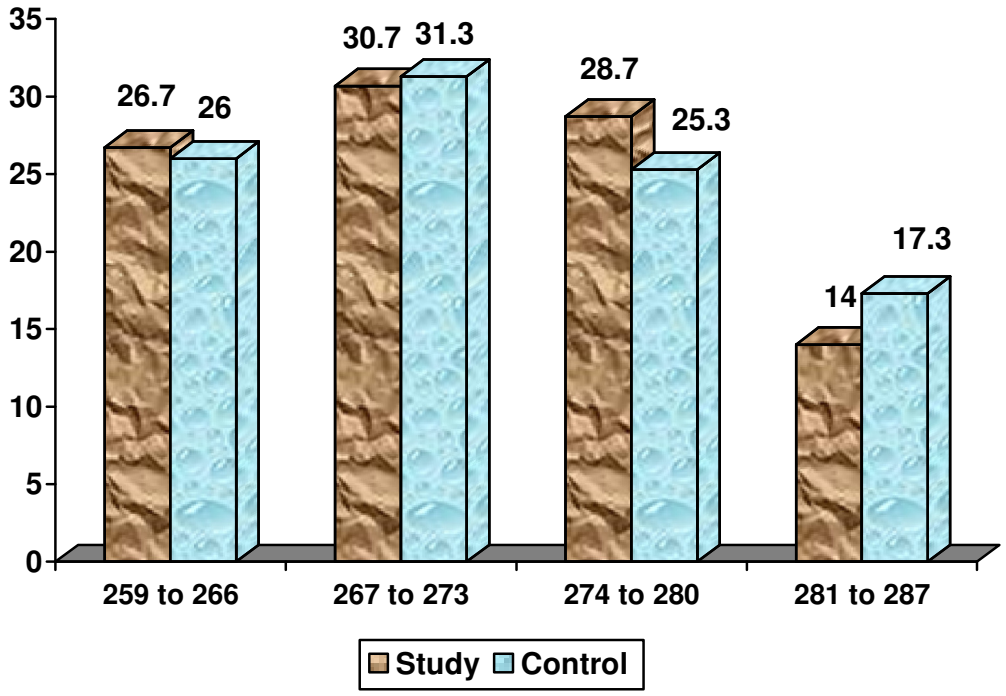


TABLE:3

MODE OF ONSET OF LABOUR

	Study		Control	
Spontaneous	114	76.0%	125	83.3%
Induced	36	24.0%	25	16.7%

83 .3% of the control group and 76.0% of the study group had spontaneous onset of Labour.

FIGURE:3

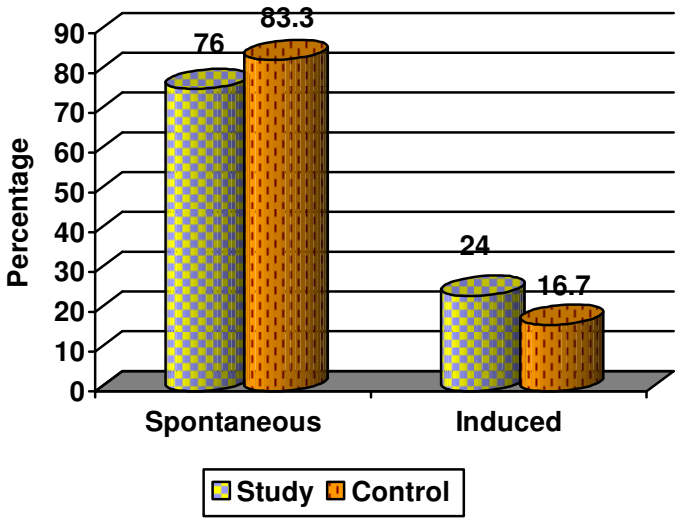


TABLE:4

RATE OF CERVICAL DILATATION

Rate of cervical Dilatation	Study	Control
cm/hr	3.71 ±1.64	1.53±0.64

The mean rate of cervical dilatation in the study and the control group were 3.71cm/hr and 1.53 cm/hr respectively.

FIGURE: 4

RATE OF CERVICAL DILATATION

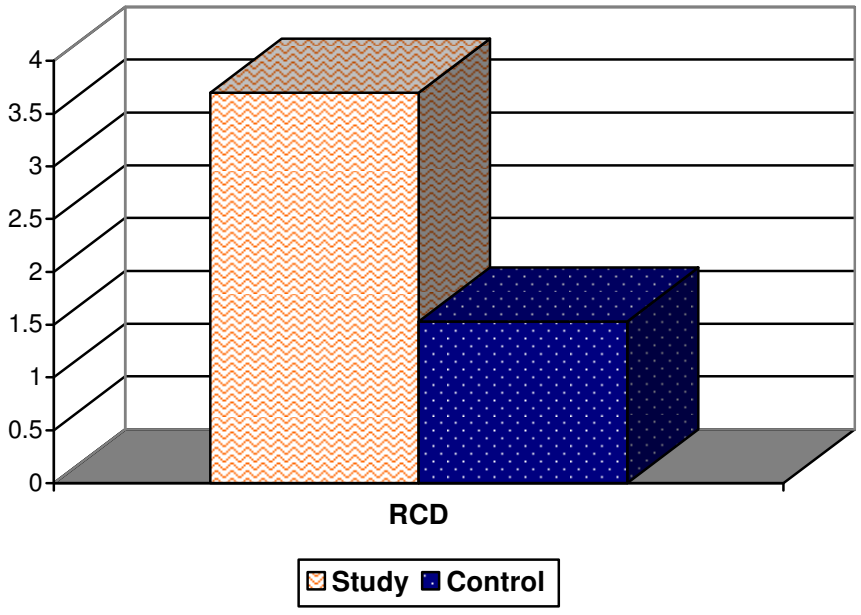


TABLE:5

DURATION OF 3 STAGES OF LABOUR

Duration (min)	Study		control	
	mean	SD	mean	SD
Active phase I stage	116.95	45.679	236.44	90.933
II stage	21.23	9.292	23.57	12.404
III stage	4.36	.979	4.83	1.589

The mean duration of active phase of I stage of labour in the study and the control group were 116.95 min (1.95hr) and 236.44 min (3.94 hr) respectively. The mean duration of II stage of labour in the study group and control group were 21.23 & 23.57 min respectively. Mean duration of the III stage of labour in the study group and the control group were 4.36min and 4.83min respectively.

FIGURE: 5

DURATION OF THREE STAGES OF LABOUR

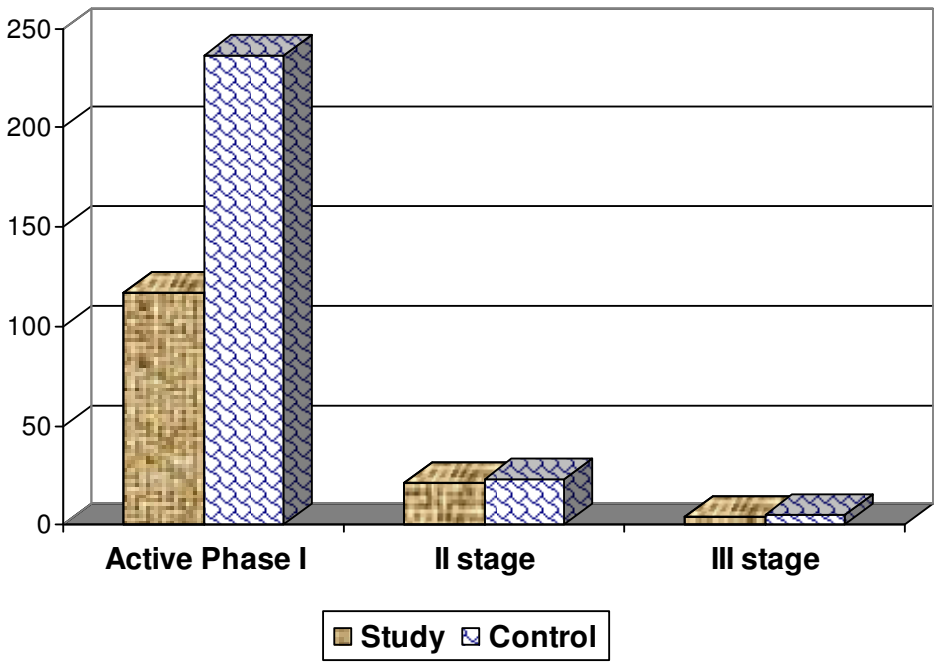


TABLE:6

TOTAL DURATION OF LABOUR

	Study	Control
Mean (min)	144.92 ± 55.799	263.59 ± 99.928

Total duration of labour in the study and the control group were 144.92 min (2.415 hr) and 263.59 min (4.39hr) respectively.

FIGURE: 6

TOTAL DURATION OF LABOUR

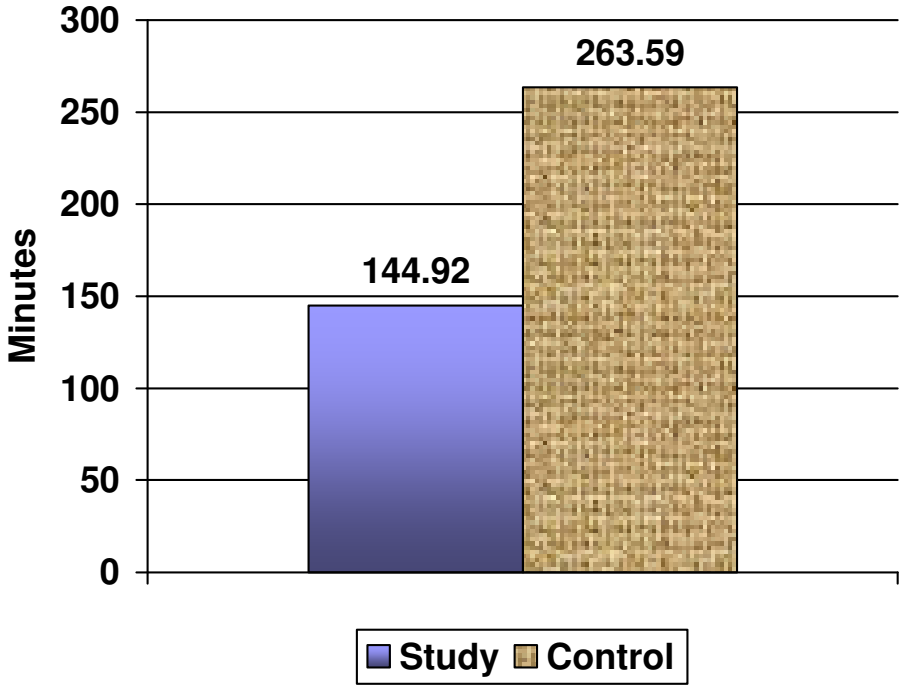


TABLE: 7

MODE OF DELIVERY

MOD	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
Normal delivery	137	91.3%	126	84.0%
Outlet forceps	7	4.7%	10	6.7%
LSCS	6	4.0%	14	9.3%

91.3% of the women in the study group and 84% of the control group had normal vaginal delivery 4.7% of the study group and 6.7% of the control group have outlet forceps delivery. 4% of the study group and 9.3% of the study control group have undergone caesarean section.

FIGURE:8

MODE OF DELIVERY - CONTROL GROUP

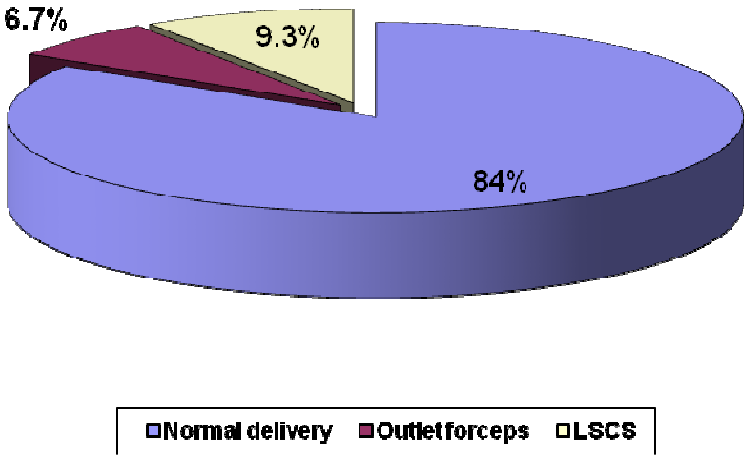


FIGURE:7

MODE OF DELIVERY - STUDY GROUP

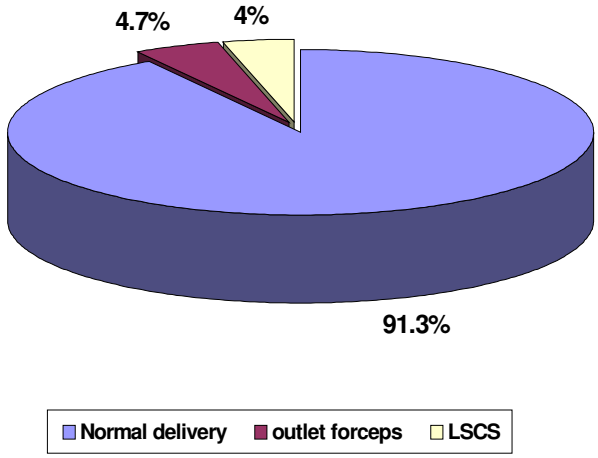


TABLE:8

PAIN RELIEF SCORE

Pain Relief score	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
No pain relief	0	0%	50	33.3%
Mild relief	21	14.0%	90	60%
Moderate relief	90	60.0%	10	6.66%
Excellent relief	39	26.0%	0	0%

All the parturient in the study group had pain relief, out of which 26% had excellent pain relief and 60% had moderate pain relief. In the control group 33.3% of the patients had no pain relief, 60% of them had mild pain relief.

FIGURE: 9

PAIN RELIEF SCORE

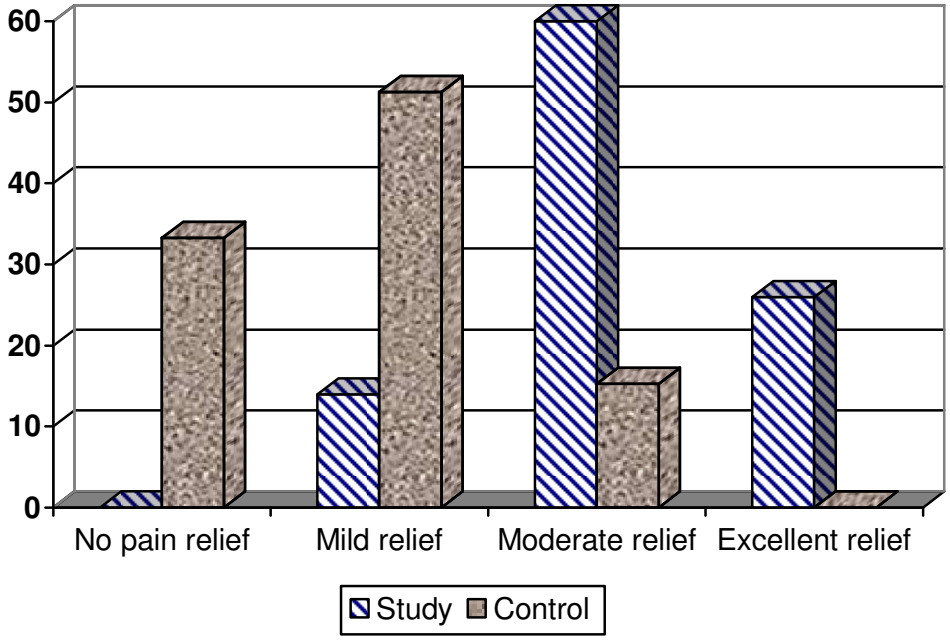


TABLE: 9

INABILITY TO COOPERATE AT 2ND STAGE OF LABOUR

Study	Control
5(3.3%)	4(2.7%)

Five women in the study group were not able to cooperate in the second stage of labour. While in the control group four women did not cooperate because of maternal exhaustion.

FIGURE: 10

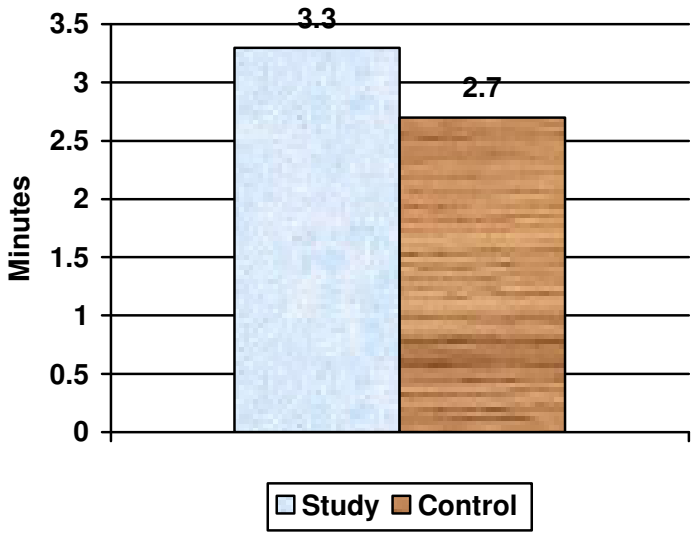


TABLE: 10

MECONIUM STAINED LIQUOR

Study		Control	
8	5.3%	10	6.6%

5.3 percentage of the study group and 6.6 percentage of the control group had meconium Stained Liquor.

FIGURE: 11

MECONIUM STAINED LIQUOR

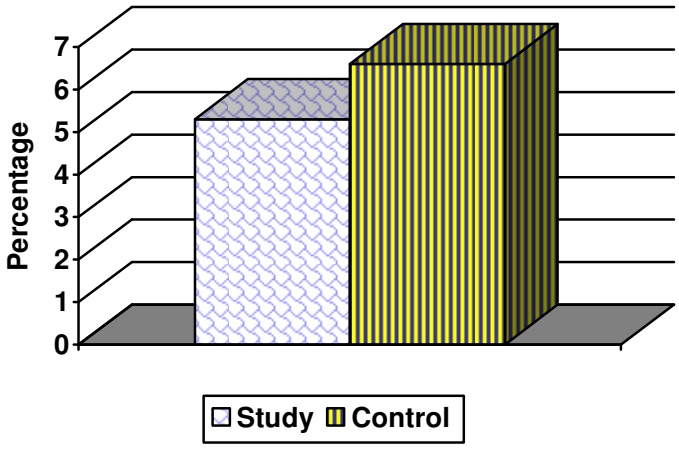


TABLE: 11

BLOOD LOSS

Study		Control	
Mean(ml)	***SD***	***Mean(ml)***	***SD***
103.8	36.55	139.94	76.33

Mean blood loss in the study group is 103.8ml, while in the control group it was 139.94ml

FIGURE: 12

BLOOD LOSS

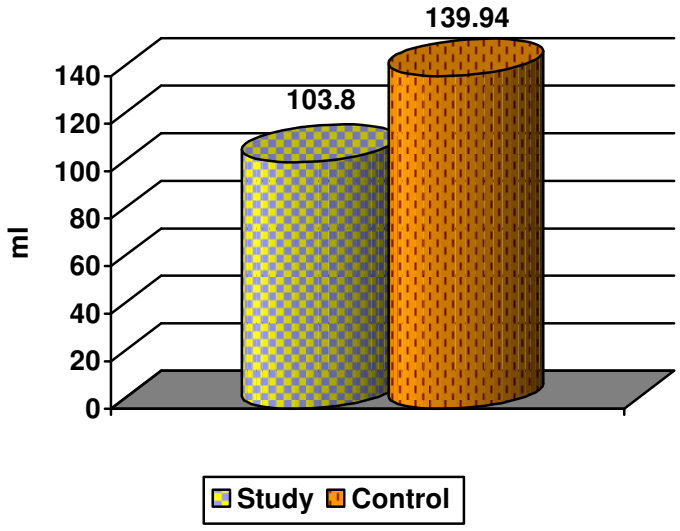


TABLE: 12

MATERNAL COMPLICATION

Maternal complication	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
No	111	74.0%	138	92%
Nausea/Vomiting	15	10.0%	12	8.0%
Tachycardia	9	6.0%	0	0%
Drowsiness	11	7.3%	0	0%
Dryness of mouth	7	4.7%	0	0%
Hyper salivation	3	2%	0	0%

Most common complication in the both groups was nausea and vomiting. No patient in either group had serious complication

FIGURE:13

MATERNAL COMPLICATION

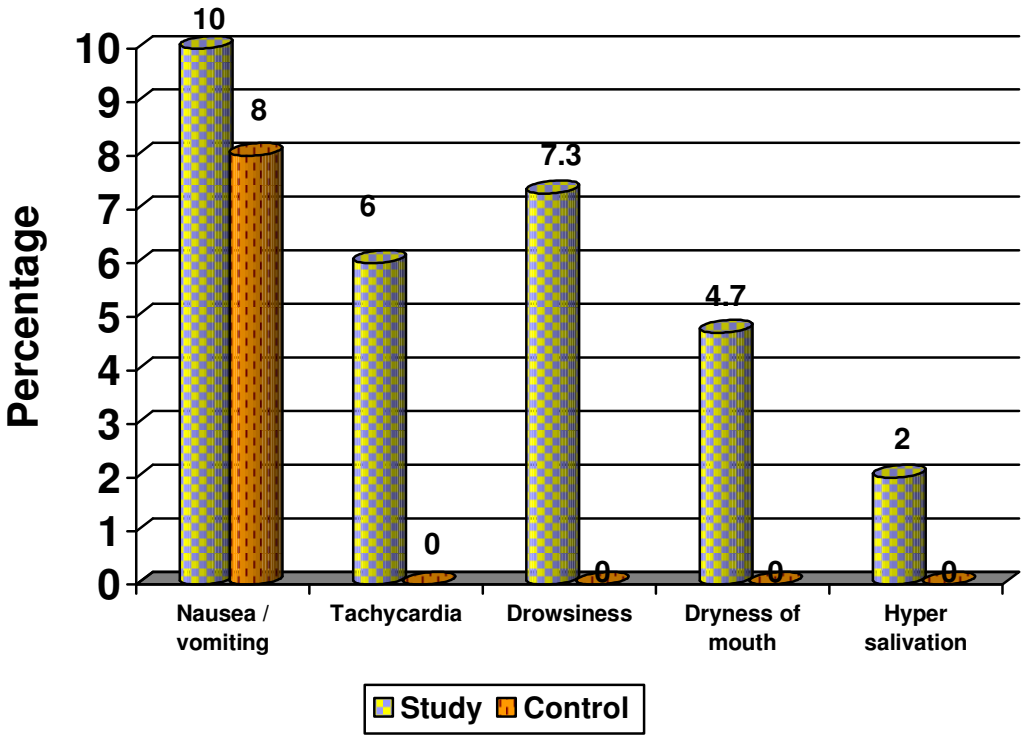


TABLE:13

MATERNAL SATISFACTION SCORE

Maternal satisfaction	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
Unsatisfied	0	.0%	111	74.0%
Just satisfied	20	13.3%	37	24.7%
Good satisfication	92	61.3%	2	1.3%
Excellent satisfication	38	25.3%	0	.0%

With the programmed labour protocol 100% of the women were satisfied. Majority of the women (61.3%) had good satisfaction with 25.3% of them had excellent satisfaction, nobody were unsatisfied. while in the control group 74% were unsatisfied.

FIGURE:14

MATERNAL SATISFACTION SCORE

TABLE:14

BIRTH WEIGHT OF THE BABIES

BW	Study		Control	
	(n=150)	***(100%)***	***(n=150)***	***(100%)***
Below 2 Kg	7	4.7%	2	1.3%
2.1 to 2.5 Kg	52	34.7%	63	42.0%
2.6 to 3 Kg	74	49.3%	64	42.7%
3.1 to 3.5 Kg	17	11.3%	21	14.0%

Majority of the babies in the study and control group are in the range of 2 to 3 kg .The mean birth weight of the babies in the study group is 2.70±0.32 kg and in the control group 2.69±0.31 kg.

FIGURE:14

BIRTH WEIGHT OF THE BABIES

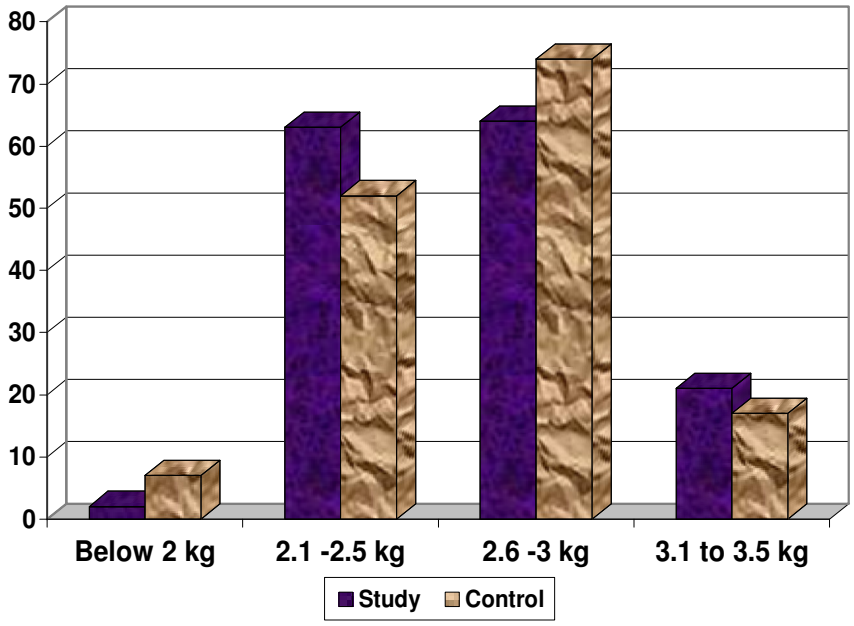


TABLE: 15

NICU ADMISSION

Study	Control
13	15

13 Babies in the study group and 15 babies in the control group are admitted in NICU. All babies recovered well and discharged within 24 to 48 hours.

FIGURE: 16

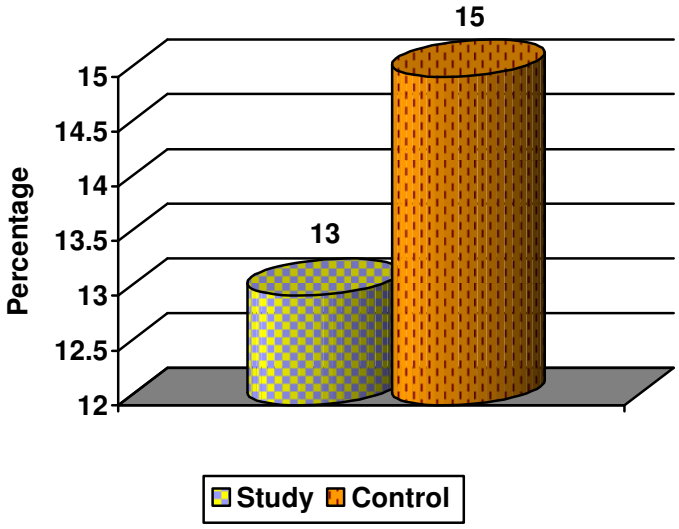


TABLE: 16

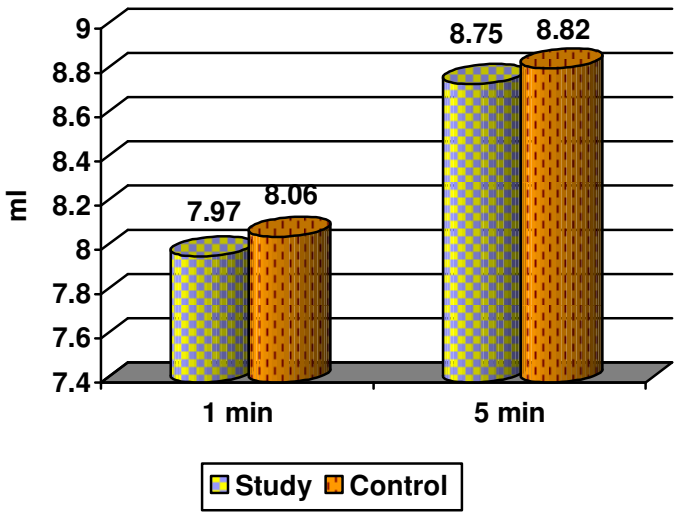
APGAR SCORE

APGAR	Study		Control	
	Mean(ml)	*SD*	*Mean(ml)*	*SD*
1 min	7.97	0.7	8.06	0.69
5 min	8.75	0.48	8.82	0.46

Mean apgar of the babies at 1 min and 5 min were 8 and 9 respectively.

FIGURE: 17

APGAR SCORE



DISCUSSION

67.3% of the women are in the age group of 21-25 years. Mean age of the women in both the groups are comparable. Mean age of the women in the study group was 22.91 ± 2.35 years as compared to 23 years in Meena et al[47] (2006) study.

The mean gestational age of our study group is 272.73±7.316 days. This is similar to that observed in Meena et al[47] (272.3 days) and shahida Mir et al[48] studies (271.6 days).

In my study, the study group had reduced duration of Active phase of I stage of labour (116.95±45.67) min, when compared with the control group (236.44 ± 90.33 min). Using student "t" test this difference was found to be significant statistically. [P value < 0.005]

In Meena et al's[47] (2006) study, the mean duration of active phase of 1st stage of labour is 165 min. When compared with the Daftary et al study[24] (240 min) we have almost half the duration. Duration of the active phase of first stage of labour is much lesser when compared with Meena et al[47] (2006) and veronica et al[49] (2008) and Daftary et al[24] (2009) studies.

Duration of second stage of labour in the study and the control group is 21.23 ± 9.29 min and 23.57 ± 12.404 min respectively. It is not significant statistically when analysed with student "t" test.

In Daftary et al[24] [and] veronica et al [49]studies, the duration of second stage of labour were 26min and 25 min respectively. This value is comparable to that observed in my study. In Meena et al [47]study, the duration of second stage is 17.46minutes, this value is lower than that observed in my study.

The mean duration of third stage of labour in my study is 4.36 min in the study group and 4.83 min in the control group. This difference in statistically insignificant on using student "t" test.(> 0.005) This is similar to that observed in Meena et al[47] (4.94min) and Shahida Mir et al[48] (4.8min) studies. In Daftary et al[24] (2009) study, the duration of 3rd stage is still lower 3.5 min.

In our study duration of all three stages of labour were shortened when compared with the control. But the difference is statistically significant in first stage of labour when studied with student "t" test. There is no statistically significant difference in the duration of II and third stage of labour. Meena et al[47] study showed reduction is the duration of all 3 stages of labour.

Total duration of labour is 144.92 ± 55.799 min in the study group and 263.59 ± 99.928 min in the control group. This difference is statistically significant on analysing with student "t" test.

The study group had faster rate of cervical dilatation (3.71cm per hour) compared to the control group (1.53cm per hour). This difference was statistically significant when using student "t" test (p value < 0.005).

In Daftary et al [24](2009) study, the mean rate of cervical dilatation was 2.5cm per hour while veronica et al[49] (2008) reported as 2.3cm per hour. The rate of cervical dilatation observed in my study is faster when compared with Daftary et al[24] (2009) and Veronica et al[49] (2008) studies.

114 women in the study group and 125 women in the control group had spontaneous onset of labour. Both groups were comparable regarding the mode of onset of labour.

Pain relief score of 2 or more is seen in 66% of the patients in the study group. Excellent pain relief is observed in 26% of the patients in the study group and none in the control group. When using chi-square test, there was statistically significant difference among the two groups.

Meena jyothi et al[46] (2008) observed excellent pain relief in 54% of the study group, moderate pain relief in 32% and mild pain relief in 14%

Shirish N Daftary et al[24] (2009) observed excellent pain relief in labour in 26% and Prasertsawat et al[50] (1986) in 24%, which is consistent with our study.

91.3% of the women in the study group and 83% of the women in the control group progressed smoothly and had vaginal delivery without any interventions. 4% of the study group and 10% of the control group had caesarean section. On analysing the difference among them using chi-square test, they were not statistically significant.

Our results are similar to that of Veronica et al's [49] (2008) study. In Daftary et al [24] (2009) study only 65.5% of the women had vaginal delivery, while in Meena jyothi et al[47] (2008) 98% of the women had vaginal delivery.

When compared with Daftary et al[24] (2009) study, our study had decreased assisted delivery (4.7%). But in Meena at al study[47] (2008) 2% had assisted delivery with no caesarean section.

4% of our parturient had caesarean section which was consistent with the veronica et al[49] (2008) study.

Mode of delivery

Mode of delivery	Study	Daftary[24]	Meena[47]	Veronica[49]
Vaginal delivery	91.3%	65.5%	98%	86.66%
Forceps	4.7%	7%	2%	6.67%
Ventouse	0%	15.5%	0%	0%
LSCS	4%	12%	0%	6.67%

8 women in the study group and 10 women in the control group had meconium stained liquor. This was not statistically significant.

The commonest complication observed in both the study group and the control group was nausea and vomiting. Other complications noted in the study group were tachycardia, dryness of mouth. No patients in either group had serious adverse effects.

Incidence of nausea and vomiting is similar to that in Meena jyothi et al (2008) and shahida M and Razia A[48] (2011) studies.

Our women in the study group (103.8 ml) had lesser blood loss compared to their controls (139.94ml). Using student “t” test, the difference was found to be statistically significant. In Meena et al study, the mean blood loss was 110ml, that was consistent with my study.

Daftary et al observed blood loss of only 60ml. In Veronica et al study, he observed blood loss of 75ml.

There was no neonatal mortality in either group. Neonatal outcomes were comparable in both the groups. There was no statistically significant difference between the study and the control group.

All the babies had Apgar score of 7-9 at one and five minutes. 2 babies in the control group had Apgar score of six at one minute and on resuscitation, they had Apgar score of 8-9 at 5 minutes. Mean Apgar of the babies at one and five minutes in both the groups were comparable.

In their study, Sameer Dixit et al [51] (2005) reported Apgar score of 8-10 in all neonates at one and five minutes. My study is consistent with his study.

The mean birth weight of the babies in the study group and in the control group was 2.70 ± 0.32 kgs and 2.69 ± 0.31 kgs respectively. Using student "t" test, there was no statistically significant difference between them.

Shahida M and Rafia A [48] (2011) reported the mean birth weight of the neonates 2.85kgs in the study group and 2.84kgs in the control group.

Comparison of Various Studies on Programmed Labour

Outcome	My Study	Daftary[24]	Shahida[48]	Veronica[49]	Meena Jothi [47]
Vaginal Delivery	91.3%	65.5%	93%	86%	98%
Duration of Labour					
1st stage	1.95Hrs	3.5Hrs	2.98Hrs	4Hrs	2.45Hrs
2nd stage	21.23Mins	26Mins	29.6Mins	25Mins	17.46Mins
3rd stage	4.36Mins	3.5Mins	4.5Mins	3 to 5 Mins	4.94 Mins
Excellent Pain Relief	26%	24%	37%	70%	54%
Rate of Cervical Dilation	3.71cm/Hr	2.5cm/Hr	-	2.3cm/Hr	-
Blood loss	103 ml	60ml	-	75ml	110ml

SUMMARY

Study design

Three hundred uncomplicated nulliparous women were included in the study when they were in active phase and were alternately allocated to two groups. One group (study) received programmed labour protocol while the other group (control) were observed expectantly. They were monitored for adequacy of labour analgesia, progress and duration of labour, maternal and fetal outcome.

Statistical methods

Value of significance was found using cross tabulations of the study with reference to pain relief score, rate of cervical dilatation, duration of all three stages of labour, maternal and neonatal outcome.

- On comparing the age, gestational age, mode of onset of labour, there was no statistically significant difference between the study and the control group.
- Regarding pain relief, in the study group 86%had pain relief score of two and above, while in the control group 6.66% had pain relief score of two. This was statistically significant.
- The mean rate of cervical dilatation was 3.71cm per hour in the study group. It was significantly faster than that in the control group of 1.53 cm per hour.

- Total duration of labour in the control group (263.59 minutes or 4.39 hour) is significantly higher that observed in the study group (144.92 minutes or 2.42 hour).
- 9.3% of the women in the control group had caesarean section as compared to 4% in the study group. This is not statistically significant.
- In the study group blood loss was 103.8 ±36.55 ml as against 139.94 ±76.33 ml, the difference was found to be statistically significant.
- There were no serious maternal or neonatal adverse effects in either group.

CONCLUSION

- Programmed labour is an easier, safer means for ensuring less painful delivery.
- It reduces the duration of the labour without serious maternal and neonatal side effects
- Pain relief is effective with minimal maternal side effects due to the drugs used.
- Labour and childbirth are cherished by the mother and her family.
- It can be adapted safely in all Maternity hospitals in low risk gravid woman.

BIBLIOGRAPHY

1. Birth, obstetrics and human evolution. Rosanberg K, Trevethan W British journal of obstetrics and gynaecology 2002;109: 1199.
2. American College of Obstetricians and Gynecologists. Obstetric Analgesia and Anaesthesia Practice Bulletin. 2002 Jul; b:36.
3. History of pain relief. Lurie S. Euphemia Maclean, Agnes Sampson, and pain relief during labour in 16th century Edinburgh. Anaesthesia 2004;59:834-835.
4. Victoria Snegovskikh MD,, Joong Shin Park,MD, Errol R Norwitz,MD, Endocrinology and metabolism. Clinics of north America.35 (2006) 173-191
5. Dystocia Abnormal labour and fetopelvic disproportion. In Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC (Editors). Williams Obsterics 21st ed. USA: Mc Graw Hill publications; 2001 p 436.
6. Boylan PC. Active management of labor: results in Dublin, Houston, London, New Brunswick,Singapore, and Valparaiso. Birth 1989;16:114– 8.
7. Impey L, Boylan P. Active management of labour revisited. Br J Obstet Gynaecol 199106:183– 7.
8. Pates JA, Satin AJ, (Chapter Editor) Active management of labour. Obstet Gynaecol Clin N. Am USA:Elseiver publication; 2005(32). P 221-37.

9. O'Driscoll K, Folley,Mc Donald D, active management of labour as an alternative to caesarean section for dystocia.

10. Peaceman AM, Scol ML. Active management of labour. Am. J Obstet Gynecol 1996; 175: 363-68.

11. Weis S, Wo BL, early amniotomy and early oxytocin for prevention of, or theraphy for, delay in first stage spontaneous labour compared with routine care. Cochrane Database Syst Review. 2012 sep 12; 9:CD006794.

12. Jose A , Lopez-zeno M.D., Alan M. Peaceman,M.D.,Joseph A, Adashek M.D., Michael L. A controlled trial of a program for the active management of labour. N Engl J Med 1992.326. 450-454

13. PattinsonRc, Howarth GR, Mdluli W, Macdonald AP, Makin TD, Funk M. Aggressive or expectant management of labour; a randomized- clinical trial. Br. J Obstet Gynecol 2003; 110: 457-61.

14. Parturition. In Cunningham FG, Gant NF, Leveno KJ, Gilstrap III LC (Editors). Williams Obsterics 23rd edition USA: Mc Graw Hill publications; p 136 to 166.

15. Sunanda Gupta GS Anand Kumar, Hemesh Singhal. Acute Pain-Labour analgesia. Ind J Anaesth. 2006; 50(5):363-369.

16. Jones L, Othman M, Dowswell T, Alfirevic Z, Gates S, Newburn M, Jordan S, Lavender T, Neilson JP.Pain management for women in labour: an overview of systematic reviews. Cochrane Database Syst Rev. 2012 Mar 14;3:CD009234.

17. Thakur Ratna, Patidar Rekha. Comparative study of trancutaneous electrical nerve stimulation and tramadol hydrochloride for pain relief in labour. J Obstet Gynaecol ind Vol.54,No.4: July/August 2004.

18. Smith CA, Levett KM, Collins CT, Jones L. Massage, reflexology and other manual methods for pain management in labour. Cochrane Database Syst Review. 2012 Feb 15; 2:CD009290

19. Smith CA, Levett KM, Collins CT, Crowther CA. relaxation techniques for pain management in labour. Cochrane Database Syst Review. 2011 Dec 7;(12): CD009514.

20. klomp T, van Poppel M, Jones L, Lazet J, Di Nishio M, Lagro-Jansen AL. inhaled analgesia for pain management in labour. Cochrane Database Syst Review. 2011 Sep 12;9: CD009351

21. Ullman R, Smith LA, Burns E, Mori R, Dowswell T. parental opioids for maternal pain relief in labour. Cochrane Database Syst Review. 2011 Sep 8 ;(9): CD007396.

22. Anim-Somuah M, Smyth RM, Jones L. Epidural versus non-epidural or no analgesia in labour. .Cochrane Database Syst Rev. 2011 Dec 7;(12):CD000331.

23. Novikovo N, Cluver C.local anaesthetic nerve block in pain management in labour. Cochrane Database Syst Review. 2012 Apr 18 ;4(9): CD009200

24. Daftary SN, Desai SV, Nanvati MS at al. Programmed labour –An indigenously developed protocol of labour management. Int J of gynae and Obstet Ind. 2003; 6: 1.

25. K.D.Tripathy ,Essentials of Medical pharmacology, sixth edition.p 319-321, 460-465

26. Gustin HB, Huda A (Chapter Ed) Opiod Analgesia. In: Hardman JG, Limbud LE, Goodman Gliman A 9Editors) Goodman and Gilman's The pharmacological basis of Therapeutics 10th international Ed. USA; Mc Graw Hill Publication 2000. P. 590-600

27. Meena Jyoti, Singhal Prabha, Choudhary Devika. Programmed labour.J Obstet Gynacol Ind. 2006; 56(1): 53-55.

28. .Mori R, Tokumasu H, Pledge D, Kenyon S. High dose versus low dose oxytocin for augmentation of delayed labour. Cochrane Database Syst Review. 2011 Oct 5;(10): CD007201.

29. Elbourne D, Wiseman RA. Types of intramuscular opiods for maternal pain relief in labour (Cochrane review). In: Cochrane Database of systematic Reviews 2000(2). Oxford update software Ltd.

30. Nagaria Tripthi, Acharya Jyotsna, Pain relief in labour- tramadol versus pentazocine. J obstet Gynaecol ind Vol.5: September/October 2006

31. Suvonnakote T, Thitadilok W, Atisook R. Pain relief during labour. J Med Assoc Thailand 1986;69:575-80.

32. Viegas OA, Khaw B, Ratnam SS. Tramadol in labor pain in primiparous patients. A prospective comparative clinical trail. Eur J Obstet Gynecol Reprod Biol 1993;49:131-5.

33. Roy A, Patra KK, Mukhopadhyay S, Guha S. Study of drotaverine on first stage of labour and pregnancy outcome. J indian Med Assoc. 2007 Aug;105(8):450, 452
34. Madhu C, Mahavarkar S, Bhave S. a randomized controlled study comparing Drotaverine hydrochloride and valethemide bromide in the augmentation of labour. Arch Gynaecol Obstet. 2010 Jul; 282(1):11-5
35. Sharma JB, Pimdor, Kumar A et al. Drotaverine hydrochloride Vs Valethamate bromide in acceleration of labour. Int J Gynecol Obstet. 2001 Sep; 74 (3): 255-60.
36. .Mishra Sl, Toshniwal A Banerjee R. Effects of Drotavarine on cervical dilatation. A comparative study with epidosin (valethamate bromide). J. Obstet Gynecol Ind 2002; 52 (3): 76-9
37. Meena Thappa, Rachana Saha, Amita Pradhan, Sweety Shrestha. Effectiveness of drotaverine hydrochloride in progression of labour. N.J.Obstet Gynaecol 2007 Nov-Dec:2(2);9-11
38. Salma Batool Naqvi, Zaib-un-Nisa Haroon. Efficacy and safety of drotaverine snd phloroglucinol in first stage of labour. Pak J Surg 2011;27(1):39-43.
39. Altissmic Ketamine and analgesia during labour (Italian article0 Minerva Anesthesiol 1979;45(12)907-14.
40. Who Recommendations for the prevention of postpartum hemorrahage,2006.
41. Oladapo OT, Akinola OI, Fawole AO, Adeyemi AS, Adegbola O, Loto OM, Fabamwo AO, Alao MO, Sotunsa JO; Nigerian AMTSL Group. Active management of third stage of labor: evidence versus practice.Acta Obstet Gynecol Scand. 2009;88(11):1252-60. doi: 10.3109/00016340903280958.

42. Gülmezoglu AM, Lumbiganon P Active management of the third stage of labour with and without controlled cord traction: a randomised, controlled, non-inferiority trial. Lancet. 2012 May 5;379(9827):1721-7. doi: 10.1016/S0140-6736(12)60206-2. Epub 2012 Mar 6.

43. Studd J. Patograms and Nomograms of cervical dilatation in management of primigravid labour. BMJ; 1973:4:451-53.

44. Wold Health Organization partograph in management of labour. The lancet 1994; 343.p.1399-404.

45. Dujardin B, De Schampheleire, Sene H, Ndiaye F Value of the alert and action lines on the partogram. The lancet 1992:339 May 30 p 1336-1338.

46. Daftary SN, Mhatra PN. Cerivicographs in management of labour in primigravidae. J Obstet Gynaecol Ind 678-89.

47. Meena Jyoti, Singhal Prabha, Choudhary Devika.. Programed labor. J Obstet Gynecol India Vol. 56, No. 1 : January/February 2006 Pg 53-55

48. Shahida Mir, Rafia Aziz. Programmed labour and its outcome.JK Practioner Vol. 16, No(12) January-June 2011

49. Veronica Irene Yuel, Vaneet kaur, Dilpreet kaur. Programmed labour for Optimizing labour and Deli very. JK science.2008 Apr-Jun; 10(2)62-64.

50. Prasertsawat PO Herabutya Y, C haturachnina R. Obstetric analgesia. Current Theerapeutic Research . 1986; 40: 1022-8

51. Sameer Dixit, Sankhe Shobha, Sankhe Suryakant. Optimizing Labour Protocol; Indian experience. FOGSI FOCUS 2005;70-73.

ABBREVIATIONS

1. LSCS- lower segment cesarean section
2. HPO- Hypothalamo pituitary ovarian axis.
3. IL- interleukin
4. TNF- tumour necrosis factor
5. BP-blood pressure
6. IM- Intramuscular
7. IV- Intravenous
8. cAMP – cyclic Adenosine Monophosphate
9. cGMP- cyclic Guanosine Monophosphate
10. GABA- Gama Amino butyric acid
11. AMTSL- Active management of third stage of labour.
12. NST-Non Stress test.
13. PPH- post partum hemorrhage
14. NICU- Neonatal intensive care unit

PROFORMA

Name Age IP No UNIT

DOA

DO Delivery

Menstrual H/O LMP EDD GA

Marital H/O Married since

Obstetric H/O

Past H/O DM / HT /TB /ASTHMA / EPILEPSY / Heart Disease

Family H/O H/O / DM / HT

O/E GC

Pallor Pedal edema Pulse BP

CVS RS

NST - Reactive Non - Reactive

PAIN RELIEF SCORE

Liquor Colour Clear Meconium

Time

Active phase of first stage of labour

Full cervical dilatation

Baby delivery time

Delivery of the placenta

Time Duration

Active phase of first stage of labour

Second stage of labour

Third stage of labour

MODE OF DELIVERY

Normal vaginal delivery

Outlet forceps with episiotomy

LSCS

MATERNAL OUTCOME

Ability to co-operate at 2nd stage of labour Yes No

Ability to feed the baby at 30 min Yes No

Blood loss

Maternal complication

NEONATAL OUTCOME

ALIVE / Dead

Male / Female

Baby weight

Apgar 1 min 5 min

NICU Admission Yes No

if yes outcome

MATERNAL SATISFACTION SCORE

Annexure I : CONSENT

I, Mrs……w/o Mr…… have been clearly explained in a language I best understand, about the procedure of the

study which I will be undergoing through, its benefits, its complications, including the side effects of the drugs used in the study and also the possibility of the drugs affecting the baby and the need for repetitive per vaginal examinations.

In my complete physical and mental sanity, I hereby give my full consent to get involved in the study.

Place : ……..

Date: Signature of the study subject

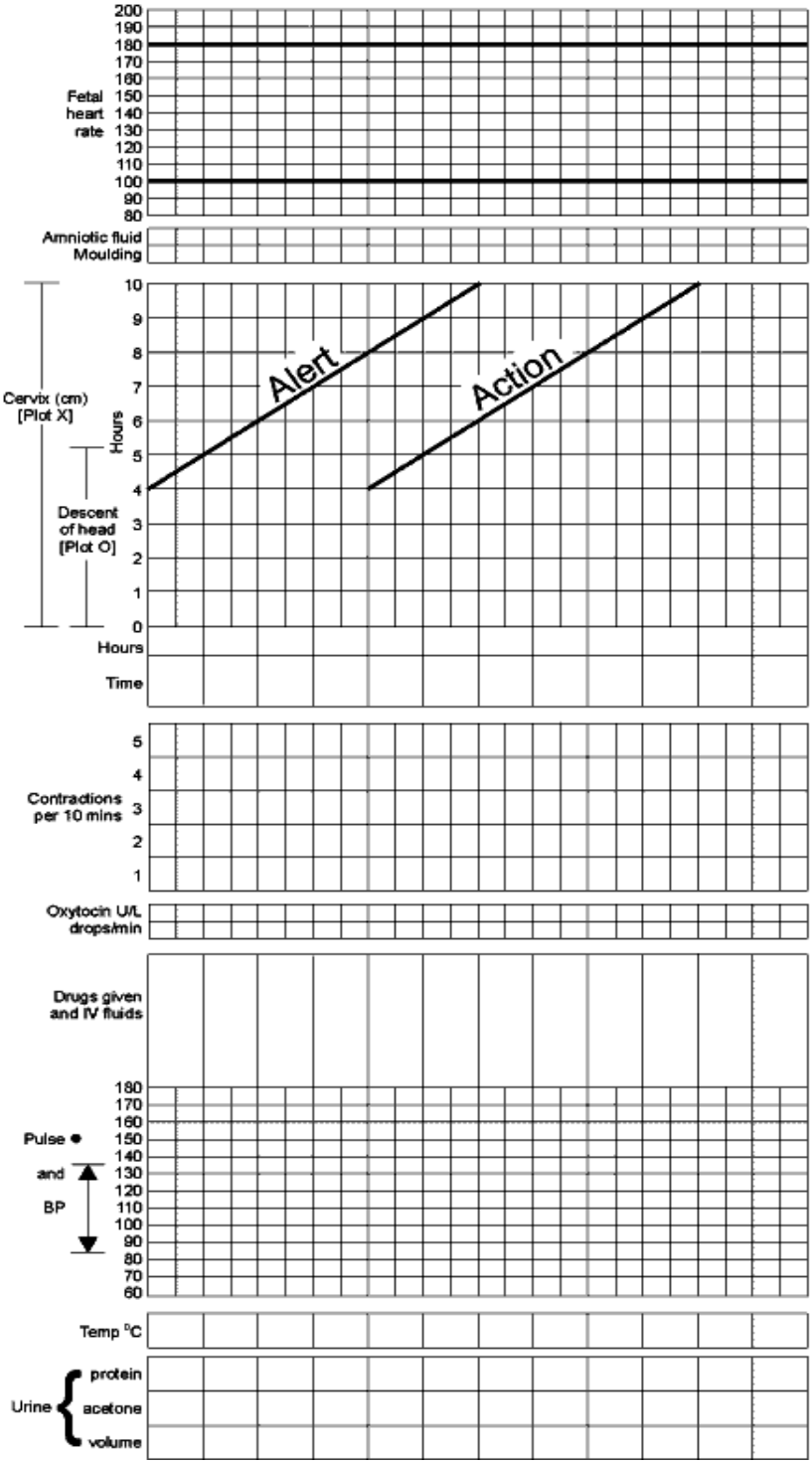
…….

Signature of witness

WHO MODIFIED PARTOGRAPH

Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours



MASTER CHART – STUDY GROUP

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase I stage	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
1	SAVITHRI	191131	24	2	273	5.25	1	80	20	10	110	1	1	1	1	90	0	2.6	8	9	0	4
2	VIJAYBARATHI	192131	22	3	275	9.33	1	45	15	5	65	1	1	1	1	100	0	2.3	8	9	0	5
3	SASIKALA	191258	25	1	263	7.00	2	60	22	5	87	1	1	1	1	80	3	2.7	7	8	0	2
4	VETRISELVI	191393	27	2	273	2.33	1	180	15	4	199	1	1	1	1	95	4	2.8	7	8	0	4
5	SANGEETHA	191508	21	2	277	2.47	1	170	20	5	195	1	1	1	1	70	0	2.6	8	9	0	4
6	NAGALAKSHMI	191521	27	2	264	3.82	2	110	17	5	132	1	1	1	1	60	1	2.75	8	9	0	4
7	SENTHAMILSELVI	191654	21	2	271	6.46	1	65	17	4	86	1	1	1	1	85	0	2.5	8	9	0	4
8	SEETHA	191655	22	2	274	3.82	2	110	15	5	130	1	1	1	1	120	3	2.75	8	9	0	5
9	SASIREKHA	191653	22	2	260	3.00	1	140	15	5	160	1	1	1	1	65	0	3	8	9	0	4
10	PRIYANKA	191643	21	2	271	3.23	1	130	32	6	168	1	1	1	1	105	0	2.75	8	9	0	3
11	BANUMATHY	191407	21	1	271	3.00	1	140	14	4	158	1	1	1	1	110	0	3	7	8	0	5
12	DEEPA	191737	20	1	275	3.23	1	130	9	5	144	1	1	1	1	80	3	1.75	7	8	1	3
13	MAHARANI	191764	24	2	277	1.64	1	256	7	5	268	2	1	0	1	90	4	2.3	8	9	0	5
14	SARANYA	191879	22	2	278	3.50	1	120	20	5	145	1	1	1	1	90	1	3	8	9	0	4
15	SILAMBOLI	191753	22	2	270	3.50	2	120	20	4	144	1	1	1	1	110	0	2.25	7	8	0	5
16	SANGEETHA	192093	20	2	273	4.20	1	100	17	5	122	1	1	1	1	120	0	2.5	8	9	0	4
17	PETCHAYEE	192211	30	3	265	4.57	1	92	16	3.2	111.2	1	1	1	1	160	0	2.45	9	9	0	5
18	JEYACHITRA	192130	30	2	272	10.24	1	41	5	2	48	1	1	1	1	120	0	2.5	8	9	0	4
19	KAVITHA	192168	20	3	266	3.93	1	107	5	3	115	1	1	1	1	80	3	2.5	8	9	0	5
20	SANGEETHA	191998	25	2	280	4.67	1	90	28	7	125	2	1	0	1	70	2	3.25	7	8	0	4
21	SANTHI	192119	27	2	283	3.28	2	128	17	4	149	1	1	1	1	95	0	2.55	8	9	0	4
22	UMARANI	192349	25	3	261	10.50	1	40	14	4	58	1	1	1	1	60	1	2	7	8	0	5
23	PARAMESHWARI	192322	20	1	265	7.00	2	60	13	4	77	1	1	1	1	100	3	2.7	8	9	0	2
24	VIJAYASELVI	192336	27	1	271	7.50	1	56	14	4	74	1	1	1	1	120	0	2.5	9	9	0	3
25	SELVI	192339	22	1	274	4.67	2	90	13	4	107	1	1	1	1	110	0	2.75	9	9	0	3
26	VIDIHYA	192465	20	3	278	5.92	1	71	12	3.5	86.5	1	1	1	1	120	0	2.5	9	9	0	3
27	NAGASREE	192416	22	2	282	7.00	1	60	18	4	82	1	1	1	1	110	0	2.25	9	9	0	3
28	SIVASHANKARI	192360	27	3	272	4.67	1	90	23	5	118	1	1	1	1	100	3	2.7	9	9	0	4
29	MANJULA	192293	25	2	286	5.60	2	75	10	4	89	1	1	1	1	60	1	2.5	9	9	0	4
30	KAVITHA	192436	27	2	272	4.00	1	105	10	4	119	1	1	1	1	40	0	2.55	8	9	0	4

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase I stage	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
31	RAJAKULI	192165	18	2	261	2.33	1	180	30	5	215	1	1	1	1	85	4	2.25	8	9	0	4
32	SUDHA	192485	23	1	271	2.63	1	160	15	3	178	1	1	1	1	80	0	2.7	9	9	0	1
33	KALA	192506	21	2	270	2.84	1	148	15	4	167	1	1	1	1	65	1	3	9	9	0	3
34	SARANYA	193223	21	2	259	3.00	1	140	12	3	155	1	1	1	1	60	3	2.6	8	9	0	4
35	ELAMATHI	193441	23	3	259	3.11	1	135	28	5	168	1	1	1	1	70	0	2.8	8	9	0	5
36	DURGA	193637	20	2	286	3.00	1	140	15	4	159	1	1	1	1	110	0	2.75	8	9	0	4
37	TAMILSELVI	106208	22	2	272	2.47	1	170	30	5	205	1	1	1	1	95	0	2.7	8	9	0	4
38	LAKSHMI	205949	19	2	278	3.11	1	135	20	6	161	1	1	1	1	170	0	3.3	8	9	0	3
39	ELAKIYA	206112	23	3	270	2.33	1	180	40	5	225	1	1	1	1	120	1	2.54	8	9	0	5
40	JANSIRANI	206023	20	2	280	2.63	2	160	40	5	205	1	1	1	1	60	0	3	8	9	0	4
41	KASTHURI	206325	20	2	280	2.80	2	150	33	5	188	1	1	1	1	70	0	2.5	8	9	0	4
42	VASANTHA	206029	24	2	284	3.11	1	135	30	4	169	1	1	1	1	80	0	2.75	8	9	0	5
43	SARANYA	206458	19	2	259	2.80	1	150	38	4	192	1	1	1	1	95	0	2.5	8	9	0	4
44	SASIKALA	206641	25	2	272	3.50	1	120	20	5	145	1	1	1	1	100	0	2.9	8	9	0	3
45	SUDHA	206785	19	2	280	2.80	1	150	20	5	175	1	1	1	1	110	2	2.8	8	9	0	4
46	SURYAKALA	206918	20	2	270	2.00	2	210	24	6	240	1	1	1	1	100	1	2.8	8	9	0	3
47	SENTHAMARAI	206947	22	2	280	7.00	1	60	22	4	86	1	1	1	1	75	0	2.9	8	9	0	2
48	MEENA	206921	23	2	272	3.50	1	120	36	4	160	1	1	1	1	85	0	2.8	8	9	0	3
49	SHANTHI	207083	20	2	280	2.63	2	160	20	4	184	1	1	1	1	110	0	2	8	9	0	3
50	KALAISELVI	207087	24	3	272	3.23	2	130	20	5	155	1	1	1	1	125	0	2.53	8	9	0	3
51	VANITHA	206696	22	2	270	3.50	1	120	45	5	170	2	1	0	1	120	1	3.2	9	9	0	4
52	SATHYAKALA	207334	24	3	280	2.71	1	155	25	5	185	1	1	1	1	100	0	2.7	8	9	0	5
53	GANGA	201418	25	2	259	3.82	1	110	25	4	139	1	1	1	1	95	0	2.8	9	9	0	4
54	GOWTHAMI	201682	18	3	266	2.90	1	145	25	5	175	1	1	1	1	60	0	2.5	9	9	0	5
55	PETCHIAMAL	202027	23	1	260	2.33	1	180	38	7	225	1	1	1	1	70	1	2.25	7	8	0	2
56	THANMOZHI	202117	23	2	280	2.21	2	190	29	4	223	1	1	1	1	60	0	2.7	7	9	0	4
57	GOWTHAMI	202263	22	2	272	4.94	1	85	15	5	105	1	1	1	1	70	0	2.5	8	9	0	4
58	NIRMALA	202385	21	2	266	3.00	1	140	28	5	173	1	1	1	1	80	0	2.5	8	9	0	4
59	VIMALA	202389	23	2	281	3.36	2	125	35	4	164	1	1	1	1	65	1	3	8	9	0	4
60	LAKSHMI	202399	22	2	270	3.11	1	135	23	5	163	1	1	1	1	110	0	2.7	9	9	0	4

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								Active phase I stage	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
61	MUNESSWARI	202914	26	2	272	2.80	1	150	20	4	174	1	1	1	1	120	0	3.1	9	9	0	5
62	PREMA	202759	21	3	281	3.82	2	110	15	5	130	1	1	1	1	170	0	2.85	8	9	0	4
63	MAHALAKSHMI	203182	21	2	275	3.00	1	140	30	5	175	1	1	1	1	180	0	2.5	8	9	0	4
64	ELAKIYA	203174	23	3	280	2.80	1	150	60	5	215	1	1	1	1	110	4	3.3	8	9	0	5
65	MALARKODI	202833	21	2	276	3.50	2	120	40	3	163	2	1	0	1	120	0	2.5	9	9	0	4
66	SARANYA	203306	19	2	275	2.55	1	165	24	5	194	1	1	1	1	60	0	3	8	9	0	5
67	VAIDHEGI	203505	23	3	278	2.00	1	210	38	5	253	1	1	1	1	70	0	3.1	8	8	0	4
68	KANAGA	203222	22	2	264	3.23	1	130	39	5	174	1	1	1	1	115	0	2.6	8	9	0	5
69	JEYANTHI	203754	25	3	280	4.00	1	105	25	5	135	1	1	1	1	120	0	3.5	8	9	0	4
70	SATHYA	203915	28	3	270	4.00	1	105	17	4	126	1	1	1	1	100	0	2.5	8	9	0	5
71	PARVATHY	203865	27	2	260	3.23	1	130	35	4	169	1	1	1	1	110	0	2.5	8	8	0	5
72	ABIRAMASUNDARI	204105	24	3	275	4.94	1	85	20	4	109	1	1	1	1	120	0	3.3	8	8	0	4
73	MANIMEHALAI	203652	21	2	283	4.20	2	100	27	5	132	1	1	1	1	110	0	2.8	7	8	0	5
74	KALAIMANI	204193	22	1	277	3.00	1	140	15	5	160	1	1	1	1	120	0	2.5	7	8	0	4
75	ANANTHAVALLI	204203	21	2	282	3.82	1	110	25	3	138	1	1	1	1	110	0	2.75	8	9	0	3
76	GOWRI	204140	22	3	273	4.67	1	90	15	4	109	1	1	1	1	150	1	2.75	8	9	0	5
77	PUGHAZHENDHI	204458	21	2	276	4.67	1	90	22	4	116	1	1	1	1	130	3	3.2	8	9	0	4
78	AMUDHA	204523	25	3	280	2.71	1	155	30	4	189	2	2	1	1	180	0	3	7	8	0	4
79	SUGANTHI	204649	25	2	281	4.00	2	105	23	4	132	1	1	1	1	155	0	3.2	6	7	1	4
80	REKHA	204657	24	3	266	2.33	1	180	24	4	208	1	1	1	1	120	2	2.5	8	9	0	5
81	VEMBHU	204738	21	2	281	4.00	2	105	15	5	125	1	1	1	1	100	0	2.6	8	9	0	4
82	BOWTHINA	204751	20	2	280	2.80	1	150	20	4	174	1	1	1	1	120	0	2.5	7	8	0	3
83	ABINAYA	204783	23	2	280	3.11	1	135	25	4	164	1	1	1	1	110	0	2.7	8	9	0	4
84	MANJALMATHA	204828	21	3	266	4.20	2	100	15	4	119	1	1	1	1	100	0	2.5	9	9	0	5
85	SIVARANJANI	204871	24	3	275	3.00	1	140	25	4	169	1	1	1	1	90	0	2.75	8	9	0	5
86	TAMILSELVI	205008	20	3	282	3.82	1	110	20	4	134	1	1	1	1	120	0	2.5	8	9	0	4
87	REVATHY	205045	28	3	274	4.00	1	105	20	4	129	1	1	1	1	150	0	2.5	8	9	0	4
88	MAHESWARI	205232	26	3	266	5.25	1	80	15	4	99	1	1	1	1	100	0	2.8	7	8	0	5
89	SELVI	205310	25	1	266	4.00	1	105	20	45	170	1	1	1	1	150	0	2.6	7	8	0	2
90	RADHIKA	205332	21	2	261	4.42	1	95	28	4	127	1	1	1	1	60	0	3	7	8	0	4

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								Active phase I stage	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
91	GUNAVATHY	205485	21	2	270	5.60	1	75	15	3.5	93.5	1	1	1	1	70	0	2.7	7	8	0	4
92	KAYALVIZHI	205499	20	2	281	4.42	2	95	22	4	121	1	1	1	1	120	2	2.75	8	9	0	4
93	SRIBALA	205581	23	2	273	5.25	1	80	18	4	102	1	1	1	1	110	0	2	8	9	0	4
94	KIRIJA	205584	22	2	262	7.00	1	60	20	4	84	1	1	1	1	60	0	2.8	8	9	0	4
95	KANAGA	205738	20	1	264	2.33	1	180	20	4	204	1	1	1	1	80	0	2.7	7	9	0	2
96	KARTHIGA	205752	25	2	261	3.65	1	115	16	4	135	1	1	1	1	150	1	2.5	8	9	0	3
97	SHARMILA	205889	24	1	266	2.00	1	210	30	4	244	1	1	1	1	90	2	3	8	9	0	2
98	PREMA	208393	23	1	284	4.67	2	90	17	4	111	1	1	1	1	85	3	3.3	9	9	0	2
99	SUMATHY	209627	23	2	286	4.20	2	100	15	3	118	1	1	1	1	100	0	2	9	9	0	3
100	VEERAJOTHI	223577	26	2	279	3.82	1	110	30	4	144	1	1	1	1	90	0	2	9	9	0	4
101	BHUVANESWARI	215589	19	2	280	4.00	1	105	25	4	134	1	1	1	1	100	0	2.75	8	9	0	4
102	SEETHA	217713	22	2	273	6.00	1	70	21	4	95	1	1	1	1	110	0	3.4	9	9	0	4
103	KANNAKI	218243	20	2	271	4.00	1	105	20	4	129	2	1	0	1	60	0	3	8	9	0	3
104	KALAISELVI	218317	22	3	264	3.50	1	120	27	3	150	1	1	1	1	95	4	2.4	7	8	0	5
105	SASIKALA	218369	25	22	280	3.36	1	125	15	3	143	1	1	1	1	120	0	3.3	9	9	0	4
106	SINDHUJA	218428	22	2	273	3.50	2	120	24	3	147	1	1	1	1	110	2	2.8	8	9	0	3
107	LALITHA	218455	23	2	266	4.42	1	95	18	4	117	1	1	1	1	95	3	2.6	8	9	0	3
108	GOWRI	218543	21	2	278	2.71	1	155	27	4	186	1	1	1	1	100	0	2.5	7	8	0	4
109	TAMILMANI	218792	28	2	279	NA	1			4	4	3	2	1	1	210	0	3.25	6	7	1	2
110	TAMILMANI	218849	21	2	273	3.36	1	125	15	4	144	1	1	1	1	100	0	3	7	8	0	4
111	JAYAPRIYA	218892	22	22	260	3.23	1	130	24	5	159	1	1	1	1	110	1	3	8	9	0	3
112	DEVI	218998	27	2	262	3.82	1	110	20	5	135	1	1	1	1	120	0	2.7	9	9	0	4
113	ANGELAMARY	219135	23	1	266	4.20	1	100	28	4	132	1	1	1	1	130	0	3	9	9	0	4
114	VASUMATHY	219241	21		273	3.00	1	140	19	5	164	1	1	1	1	120	0	3.3	8	9	0	2
115	CHITRA	219359	23	3	259	7.00	1	60	13	4	77	1	1	1	1	110	0	2.4	8	9	0	5
116	KASTHURI	219547	21	2	273	5.25	1	80	28	4	112	1	1	1	1	120	1	2.5	8	9	0	4
117	PARKAVI	219691	21	2	273	2.84	1	148	20	4	172	1	1	1	1	95	0	2.25	9	9	0	4
118	SUGASINI	219549	24	2	273	4.00	1	105	15	5	125	1	1	1	1	65	0	3	9	9	0	4
119	SHANTHI	219673	21	3	280	4.00	2	105	20	4	129	1	1	1	1	65	0	2.5	8	9	0	5
120	AMALA	219828	23	3	266	4.20	1	100	10	4	114	1	1	1	1	110	0	2.75	9	9	0	4

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								Active phase I stage	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
121	RAMA	220212	22	3	276	3.50	1	120	19	4	143	1	1	1	1	70	0	2.5	8	9	0	5
122	SUSILA	220311	27	1	253	4.00	2	105	30	5	140	1	1	1	1	80	0	3	7	8	0	2
123	SELVARANI	220594	24	1	284	2.80	2	150	35	5	190	1	1	1	1	80	4	2.5	8	9	0	3
124	THENMOZHI	220820	22	1	268	3.11	1	135	28	4	167	1	1	1	1	110	0	2.5	7	8	0	2
125	KOUSALYA	221022	20	2	280	NA	1			3	3	3	1	1	1	120	2	2.5	7	8	1	1
126	GAYATHRI	222550	25	3	282	3.00	1	140	23	6	169	1	1	1	1	110	0	2.6	8	9	0	5
127	GEETHA	223348	24	3	274	2.47	1	170	18	5	193	1	1	1	1	120	0	2.5	7	8	0	5
128	MANGAYARKARASI	223677	28	2	280	4.00	1	105	17	3	125	1	1	1	1	130	0	225	8	9	0	4
129	DEVI	223872	20	2	286	4.67	2	90	37	4	131	1	1	1	1	110	2	2.6	9	9	0	4
130	KAVITHA	223912	29	1	278	2.71	2	155	21	8	184	2	1	1	1	15	0	3.2	9	9	0	2
131	JAMUNARANI	223962	22	3	275	2.33	2	180	40	5	225	1	1	1	1	95	0	2.5	8	9	0	5
132	VANITHA	224188	23	2	259	4.42	1	95	23	4	122	1	1	1	1	110	0	2.75	7	8	0	4
133	MAHALAKSHMI	224259	23	3	280	4.67	2	90	25	6	121	1	1	1	1	180	0	2.5	9	9	0	5
134	SUDHA	224528	23	2	274	NA	1			3	3	3	1	1	1	250	2	2.27	8	9	0	2
135	SELVIMARY	224603	26	2	270	4.20	1	100	17	5	122	1	1	1	1	110	0	2.75	8	9	0	3
136	SATHYA	224656	23	2	273	4.67	2	90	18	4	112	1	1	1	1	95	3	2.8	7	8	0	4
137	ANANTHALAKSHMI	224662	27	2	273	1.40	2	300	25	5	330	1	1	1	1	60	0	3.3	8	9	0	3
138	MAHASWARI	225121	25	1	278	NA	1			2	2	3	1	1	1	150	0	2.6	6	9	0	2
139	VASANTHI	225142	24	1	270	NA	1			3	3	3	1	1	1	250	0	3	8	8	1	2
140	MANIMOZHI	225276	25	2	281	3.82	1	110	20	4	134	1	1	1	1	110	0	3	8	9	0	3
141	SARAWATHY	225386	19	2	266	4.20	1	100	18	4	122	1	1	1	1	80	4	3	9	7	0	4
142	SUGANYA	225546	21	2	280	NA	1			3	3	3	1	1	1	260	0	2.8	7	9	0	3
143	KAVITHA	225614	23	3	266	3.23	1	130	25	5	160	1	1	1	1	70	0	2.5	7	9	0	5
144	VARALAKSHMI	225712	24	2	278	3.23	1	130	15	5	150	1	1	1	1	110	1	2.8	9	9	0	3
145	DURGADEVI	225717	20	3	262	3.82	1	110	21	4	135	1	1	1	1	65	0	3	8	8	0	5
146	MALATHY	225917	28	1	272	3.82	2	110	20	4	134	1	1	1	1	70	0	2	8	8	0	2
147	MARIAMMAL	225938	27	3	265	2.63	1	160	15	4	179	1	1	1	1	120	0	2.5	8	9	0	5
148	DHANALAKSHMI	226016	23	2	264	4.20	1	100	21	4	125	1	1	1	1	75	0	2.6	8	9	0	2
149	LATHA	226107	24	3	275	2.80	2	150	25	5	180	1	1	1	1	110	0	2.8	8	9	0	5
150	RAMAMANI	226327	22	3	274	3.23	1	130	20	4	154	1	1	1	1	75	0	2.5	8	9	0	5

Control Group

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
1	POONGODI	191157	21	1	287	2.33	2	180	25	10	215	1	1	1	1	280	0	3.2	8	9	0	0
2	MEENATCHI	191193	22	2	284	2.33	2	180	35	10	225	1	1	1	1	140	0	2.5	8	9	0	2
3	ANITHA	191521	30	0	287	1.91	1	220	25	3	248	1	1	1	1	180	1	2.7	8	9	0	0
4	DHANALAKSHMI	192176	21	1	288	1.75	2	240	19	6	265	1	1	1	1	350	1	2.2	9	9	0	1
5	RENUKA	192926	23	1	281	2.00	2	210	16	4	230	1	1	1	1	180	0	3	9	9	0	1
6	LOGANAYAKI	192842	20	0	280	1.75	1	210	30	6	246	1	1	1	1	95	0	2.8	7	9	0	2
7	BHUVANESWARI	193377	23	1	279	1.87	2	225	28	6	259	1	1	1	1	110	1	2.5	7	9	0	1
8	BHUVANESWARI	193545	20	2	269	1.29	1	325	13	5	343	1	1	1	1	210	0	2.75	8	9	0	2
9	POTHUMPONNU	193527	25	1	270	1.68	1	250	46	4	300	1	1	1	1	105	0	2.5	8	9	0	1
10	KAMALAVENI	201769	21	1	266	3.23	1	130	25	5	160	1	1	1	1	60	0	2.4	9	9	0	0
11	REVATHY	201899	22	0	270	1.62	1	260	25	8	293	1	1	1	1	80	0	2.8	8	8	0	1
12	DURGA	201989	21	1	266	1.65	2	255	17	6	278	1	1	1	1	50	0	2.6	8	9	0	0
13	SHAMEEM	202491	22	1	261	2.00	2	210	20	7	237	1	1	1	1	70	0	2.4	8	9	0	1
14	DEVI	202764	20	0	282	1.50	2	280	30	5	315	1	2	1	1	120	0	2.5	8	9	0	0
15	ELAKIYA	202869	32	1	275	1.62	1	260	18	4	282	1	1	1	1	180	0	3.3	8	9	0	1
16	JEYAKUMARI	203101	25	1	282	1.75	2	240	23	7	270	1	1	1	1	210	0	2.5	8	9	0	1
17	LAVANYA	203304	26	1	280	1.47	1	285	25	3	313	1	1	1	1	170	1	2.5	8	9	0	2
18	VELLAIYAMMAL	203106	27	0	272	1.22	1	345	25	6	376	1	1	1	1	60	0	2.45	8	9	0	0
19	VIJI	203462	24	1	278	1.62	1	260	15	7	282	1	1	1	1	90	0	3.25	8	9	0	0
20	MALATHI	203479	23	1	290	1.83	1		21	6	27	1	1	1	1	280	0	3.25	8	8	0	0
21	ANNUSHYA	203602	26	0	261	1.45	1	290	30	7	327	1	1	1	1	120	0	2.5	8	9	0	0
22	SATHYA	203782	22	1	272	1.35	1	310	30	4	344	1	1	1	1	60	0	2.6	9	9	0	1
23	SUGANYA	203890	21	1	264	1.32	1	315	38	7	360	1	1	1	1	80	0	2.3	9	9	0	1
24	KANAGARANI	203940	23	1	281	1.11	1	330	44	6	380	1	1	1	1	120	0	2.9	8	9	0	1
25	UMADEVI	203942	21	2	280	1.55	1	270	65	4	339	2	1	0	1	320	0	2	9	9	0	2
26	PUNITHA	204118	25	1	274	1.08	1	390	20	4	414	1	1	1	1	90	0	2.3	8	9	0	1
27	JEYALAKSHMI	204254	25	1	281	1.58	2	265	23	4	292	1	1	1	1	110	0	2.75	8	9	0	1
28	MARIYAMMAL	204843	27	0	262	1.68	1	250	18	4	272	1	1	1	1	70	0	2.6	7	9	0	0
29	JEEVAREKHA	204541	21	1	287	1.31	2	320	30	7	357	1	1	1	1	85	0	2.5	7	8	0	2
30	SUBBULAKSHMI	204074	22	0	280	1.09	1	385	27	4	416	1	1	1	1	150	0	2.6	8	9	0	0
31	KAMATCHI	204415	19	1	266	1.62	1	260	28	7	295	1	1	1	1	170	0	2.5	9	9	0	1
32	SUGANYA	204745	26	0	260	1.20	1	350	30	7	387	1	1	1	1	210	0	2.7	8	9	0	0

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
33	MALARKODI	204929	18	0	266	1.55	1	270	25	4	299	1	2	1	1	95	0	2.5	9	9	0	0
34	REVATHY	205181	27	0	280	1.22	1	345	35	4	384	1	1	1	1	100	0	2.1	9	9	0	0
35	NITHYA	205261	21	1	270	1.53	1	275	40	3	318	1	1	1	1	90	0	2.5	8	9	0	0
36	MENAKA	205573	19	0	269	1.25	2	335	17	4	356	1	1	1	1	110	0	2.7	9	9	0	0
37	JANAKI	205582	21	0	272	1.62	1	260	15	7	282	1	1	1	1	125	0	2.6	8	9	0	1
38	SUMATHY	205665	20	2	280	1.78	1	236	65	4	305	2	1	0	1	310	0	2.6	7	9	0	2
39	BHUVANESWARI	205465	25	0	279	1.47	1	285	20	7	312	1	1	1	1	105	1	2.6	9	9	0	0
40	MARTHAL	205907	23	0	282	1.40	2	300	35	6	341	1	1	1	1	110	0	2.8	8	9	0	1
41	SASIREKHA	206056	23	0	276	1.29	1	325	23	7	355	1	1	1	1	95	0	2.8	8	9	0	1
42	KRISHANVENI	206076	24	0	278	1.55	1	270	30	8	308	1	1	1	1	75	0	2.5	9	9	0	0
43	MANVIZHI	206148	21	0	266	1.35	1	310	41	9	215	1	1	1	1	100	0	3.3	9	9	0	11
44	NITHYA	206214	21	0	274		1			4		3	2	1	1	250	0	2.5	9	9	0	0
45	AMMU	206877	22	1	270	1.55	2	270	53	5	328	1	1	1	1	100	0	3.3	8	9	0	1
46	RAJAKUMARI	206310	22	0	280	1.87	1	225	23	4	252	1	1	1	1	160	0	2.5	9	9	0	1
47	BHUVANESWARI	206580	24	0	271	1.65	1	255	25	7	287	1	1	1	1	120	0	3.1	8	9	0	1
48	MAHALAKSHMI	206334	23	0	270	2.05	1	205	16	4	225	1	1	1	1	280	1	3.5	8	9	0	3
49	RAJAKUMARI	206693	21	0	285	1.31	2	320	34	6	360	2	1	1	1	110	0	2.68	8	9	0	1
50	AYEESHA PARVE	206768	22	1	281	1.62	1	260	27	4	291	1	1	1	1	106	0	2.78	8	9	0	1
51	KIRTHIKA	206624	20	1	271	1.55	1	270	70	4	344	2	1	0	1	105	0	2.51	8	9	0	1
52	VIMALADEVI	206774	22	1	281	1.50	1	280	20	5	305	1	1	1	1	110	0	3	8	9	0	1
53	VASANTHI	206935	22	0	260	2.15	1	195	24	5	224	1	1	1	1	90	0	3.8	9	9	0	0
54	USHARANI	206938	24	1	271		1			6		3	1	1	1	20	0	2.4	7	9	0	2
55	SUMATHY	206955	25	1	262	1.65	1	255	35	4	294	1	1	1	1	60	1	2.5	9	9	0	1
56	KRISHANVENI	207103	23	1	280	1.55	1	270	21	5	296	1	1	1	1	70	0	2.5	9	9	0	1
57	PUNITHA	206982	22	1	272	1.71	1	245	25	4	274	1	1	1	1	110	0	2.5	9	9	0	0
58	ANBUMATHY	207451	20	0	280	3.50	2	120	20	4	144	1	1	1	1	100	0	2.9	8	9	0	1
59	VANITHA	207517	22	1	262	1.40	1	300	25	4	329	1	1	1	1	130	0	2.5	8	9	0	1
60	USHA	217943	27	1	281	1.51	2	278	17	4	299	1	1	1	1	210	0		8	9	0	1
61	BHARATHI	218130	25	2	280	1.55	1	270	21	4	295	1	1	1	1	220	0	2.7	8	9	0	2
62	RUKMANI	218101	24	0	273	1.95	1	215	23	4	242	1	1	1	1	110	0	2.5	8	9	0	0
63	GEETHA	218315	22	1	259	1.53	1	275	18	4	297	1	1	1	1	70	0	2.4	8	9	0	1
64	GOKILA	217632	28	1	271	1.79	1	235	50	4	289	2	1	0	1	275	1	2.6	8	9	0	2
65	DEVI	218355	23	1	281	1.31	1	310	35	4	349	1	1	1	1	60	0	2.75	8	9	0	1

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
66	PAPATHY	218325	21	1	273	1.94	1	217	13	7	237	1	1	1	1	105	0	3.25	8	9	0	2
67	MAHESWARI	218616	21	0	266	1.65	1	254	17	4	275	1	1	1	1	75	0	2.7	8	9	0	1
68	SINDHUJA	218763	23	0	266	1.22	1	345	35	7	387	1	1	1	1	95	0	2.75	8	9	0	0
69	KANIMOZHI	218867	22	1	274	1.56	1	269	16	4	289	1	1	1	1	125	0	2.5	9	9	0	1
70	NITHYA	218144	19	1	280		1			5		3	1	1	1	320	0	3	9	9	0	1
71	DEVI	218998	27	1	270	1.52	1	277	13	4	294	1	1	1	1	135	0	2.7	9	9	0	1
72	RAMYA	218842	20	1	284	1.26	2	333	28	4	365	1	1	1	1	105	0	3	8	9	0	2
73	PRIYA	218973	20	0	264	1.52	1	276	24	5	305	2	1	1	1	240	0	2.5	7	8	0	1
74	SUDHA	219149	27	1	271	1.65	1	254	29	4	287	1	1	1	1	110	1	2.3	8	9	0	0
75	THANGAMANI	218698	22	0	280	1.65	1	255	15	5	275	1	1	1	1	85	0	2.6	8	9	0	1
76	DURGADEVI	219183	27	1	266	1.83	1	230	20	5	255	1	1	1	1	120	0	2.75	8	9	0	0
77	MANIMEHALI	219140	27	1	266		1			3		3	2	1	1	280	0	2.735	6	7	1	1
78	JOTHIMANI	219287	21	0	273	1.47	1	285	25	3	313	1	1	1	1	110	0	2.8	8	9	0	0
79	KANIMOZHI	218928	23	1	273	1.95	1	215	15	4	234	1	1	1	1	120	0	3	8	9	0	2
80	VANITHA	218794	27	0	273	1.87	1	225	27	8	260	3	1	1	1	105	0	3.1	9	9	0	2
81	SAVITHA	219408	21	1	273		1			2	2	1	2	1	1	340	1	3.1	7	9	0	0
82	SATHYA	219476	26	2	276	1.25	1	335	23	4	362	1	1	1	1	105	0	3.2	8	9	0	1
83	SATHYA PRIYA	219280	21	1	274	1.65	1	255	28	3	286	1	1	1	1	95	0	3	8	9	0	1
84	JEEVA	219712	25	1	280		1			2		3	1	1	1	250	0	3	9	9	0	1
85	PARIMALA	219245	25	1	273	1.40	1	300	20	5	325	1	1	1	1	200	0	2.2	9	9	0	2
86	SAVITHA	219870	23	1	278	1.22	1	345	28	4	377	1	1	1	1	100	0	3	7	9	0	0
87	SUCHITRA	219708	21	1	268	2.33	1	180	17	3	200	2	1	1	1	120	1	3	8	9	0	0
88	SUBHA	218770	24	0	273	1.89	1	222	35	3	260	1	1	1	1	250	0	3.2	9	9	0	1
89	PRIYA	219885	24	1	281	1.54	1	272	22	4	298	1	1	1	1	90	0	3.2	9	9	0	1
90	REVATHY	219470	23	1	262	2.02	1	208	17	7	232	1	1	1	1	60	0	2.75	8	9	0	1
91	PRIYANKA	219974	19	1	259	1.58	1	266	23	4	293	1	1	1	1	85	0	2.5	8	9	0	1
92	MAHADEVI	220402	24	0	274	1.33	1	315	25	5	345	1	1	1	1	60	0	2.5	8	9	0	1
93	ANJAMMAL	220486	30	1	273	1.40	1	300	25	9	334	1	1	1	1	75	0	2.4	7	9	0	2
94	ARGAYARKANNI	220575	31	1	270	1.83	1	230	26	6	262	1	1	1	1	60	0	2.5	7	8	0	1
95	VEERASAKTHI	220745	23	1	261	1.76	1	239	25	4	268	1	1	1	1	80	0	2.5	8	8	0	1
96	NALINI	220847	21	0	280	1.49	1	281	23	4	308	1	1	1	1	70	0	2.7	9	9	0	1
97	SHANTHI	220968	30	1	267	1.55	1	270	25	4	299	1	1	1	1	120	0	2.9	8	9	0	1
98	VENMANI	221000	25	2	272	2.10	1	200	25	6	231	1	1	1	1	95	0	3.1	7	9	0	3

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								Active phase	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
99	MALATHI	221060	22	1	270	1.65	1	255	33	4	292	1	1	1	1	60	0	2.5	8	8	0	1
100	SHOBANA	221179	20	1	266	1.27	2	300	20	7	327	2	1	1	1	240	0	2.8	9	9	0	1
101	REVATHY	221019	19	0	275	1.95	1	216	14	4	234	1	1	1	1	110	0	2.8	8	9	0	1
102	RAMESHWARI	221108	24	1	266		1			2		3	1	1	1	320	0	3.16	7	9	0	1
103	LEELA	221471	23	0	271	1.24	1	340	35	4	379	1	1	1	1	125	1	2.5	9	9	0	1
104	KARTHICKA	221516	19	0	272	1.71	1	245	15	4	264	1	2	1	1	60	0	2.4	8	9	0	1
105	MEENA	221682	21	1	280	1.68	1	250	25	2	277	1	1	1	1	175	0	2.7	7	9	0	2
106	CHANDRALEKHA	221771	34	1	270	1.53	1	275	39	4	318	1	1	1	1	120	0	3	8	9	0	1
107	RATHIKA	221806	23	1	284	2.05	2	205	20	4	229	1	1	1	1	160	0	2.5	9	9	0	1
108	DEVI	221866	26	1	284	1.58	2	265	21	6	292	1	1	1	1	170	0	3	9	9	0	1
109	DEEPA	221915	26	1	260	1.33	1	315	35	7	357	1	1	1	1	110	0	2.7	8	9	0	2
110	GUNASELVI	222027	22	1	265	1.91	1	220	13	6	239	1	1	1	1	80	0	2.2	9	9	0	0
111	IMAIAZHAGI	222049	22	0	275	2.10	1	200	38	7	245	1	1	1	1	60	0	3	8	9	0	0
112	SUBANESHWARI	222050	21	1	280	2.15	1	195	46	7	248	2	1	1	1	210	0	3.25	7	7	0	2
113	VEERAMMAL	222064	27	1	274		1			3.5		3	2	1	1	340	0	2.4	6	7	1	1
114	NISHANTHI	222159	23	1	266	1.45	1	290	25	5	320	1	1	1	1	105	0	3.2	7	8	0	1
115	RANJANI	222372	20	0	284	1.87	2	225	20	4	249	1	1	1	1	125	0	2.25	7	9	0	0
116	THIRUMANASELV	222273	23	2	273		1			2		3	1	1	1	320	0	2.2	8	8	0	1
117	CHEVVANDHI	222487	22	1	271	1.45	1	290	25	4	319	1	1	1	1	125	0	2.4	7	9	0	1
118	FATHIMAJEYARA	222555	23	1	264	1.65	2	255	17	5	277	1	1	1	1	105	0	2.4	7	9	0	1
119	MARRIKANNU	222571	25	1	276	3.50	1	120	20	4	144	1	1	1	1	125	0	2.6	8	8	0	2
120	DURGADEVI	222681	23	1	281	2.10	1	200	18	4	222	1	1	1	1	95	0	2.45	7	9	0	1
121	DEVIKA	222884	21	1	274	1.55	1	270	25	4	299	1	1	1	1	60	0	3.2.9	8	8	0	1
122	RAJALAKSHMI	222711	27	0	270	2.71	1	155	15	4	174	1	1	1	1	15	0	2.9	7	7	0	1
123	SATHYA	222636	22	1	282	_	1			3		3	2	1	1	310	0	2.26	7	9	1	1
124	MARAGATHAM	222911	24	2	270	_	1			2		3	1	1	1	250	0	2.5	8	9	0	2
125	HEMALATHA	223042	21	1	263	2.10	1	200	15	6	221	1	1	1	1	110	0	2.5	8	9	0	1
126	RAGINI	222961	20	1	282	1.66	1	360	37	8	405	1	1	1	1	150	0	2.5	8	9	0	1
127	MEENAKA	222997	25	2	278	1.33	1	315	25	6	346	1	1	1	1	130	0	2.5	8	9	0	1
128	VIJAYAKALAPRIY	A 223009	32	1	273	1.83	1	230	35	5	270	1	1	1	1	180	0	2.75	9	9	0	0
129	PICHIAMMAI	223794	25	0	272	1.62	1	260	25	4	289	1	1	1	1	130	0	2.5	8	9	0	1
130	SASIKALA	223620	25	1	261		1			3		3	1	1	1	250	0	3.05	8	9	0	1
131	MAHESWARI	223812	21	0	259	1.53	1	275	27	4	306	1	1	1	1	90	0	2.5	8	8	0	2

S.No	Name	IP No	Age	Pain Relief score	GA Days	RCD cm /hr	Mode of onset of Labour	Duration of labour(mins)				MOD	Liqour color	Maternal Outcome				Neonatal outcome				Maternal satisfaction score
								Active phase	II stage	III stage	Total Duration			ability to coop. II stage	ability to feed 30 mins	Blood loss (ml)	complication	BW (kg)	Apgar 1 min	Apgar 5 Min	NICU Admission	
132	RADHIKA	224317	20	2	271	1.68	2	250	4	4	258	1	1	1	1	60	0	2.4	9	9	0	2
133	SUGANYA	224322	20	0	272	1.22	1	330	30	5	365	1	1	1	1	90	0	2.6	7	8	0	1
134	SATHYA	224390	23	1	261	1.65	1	255	23	5	283	1	1	1	1	170	1	2.5	8	9	0	0
135	CHANDRALEKHA	224480	20	0	261	1.40	1	300	25	5	330	1	1	1	1	180	0	2.75	9	8	0	1
136	REENA	224522	24	1	269	1.71	1	245	50	4	299	2	1	1	1	210	0	2.8	8	8	0	1
137	PARIMALA	224569	27	0	262	1.91	1	220	20	5	245	1	1	1	1	110	0	2.6	9	9	0	2
138	KANAGAVALLI	224727	19	1	271	1.68	1	250	25	4	279	1	1	1	1	125	0	2	8	9	0	1
139	RATHI	224821	22	0	271	1.45	1	290	22	4	316	1	1	1	1	100	0	2.4	86	9	0	2
140	NEELAVATHI	224853	23	1	270		1	_		3		3	1	1	1	350	0	2.95	8	7	0	1
141	SURYA	224855	21	1	282	3.00	2	140	18	4	162	1	1	1	1	130	0	2.75	8	9	0	1
142	RAHIMUNISH	224856	30	2	260	3.00	1	140	20	4	164	1	1	1	1	120	0	2.8	8	9	0	1
143	SUDHA	225548	22	1	266	1.47	1	285	24	5.3	314.3	1	1	1	1	180	0	3	9	9	0	0
144	JEYANTHI	224965	23	1	275	1.18	1	355	30	4	389	1	1	1	1	150	0	3	7	9	0	1
145	RATHIKA	225096	23	0	280		1	_		3		3	1	1	1	275	0	2.3	7	8	0	2
146	SIVARANJANI	224915	18	1	270	1.56	1	270	24	4	298	1	1	1	1	80	0	2.9	8	8	0	1
147	ISWARYA	225334	22	2	281	2.43	1	173	17	4	194	1	1	1	1	90	0	3	8	9	0	2
148	NATHIYA	225660	25	0	266	1.79	1	235	20	5	260	1	1	1	1	150	1	2.5	8	9	0	0
149	ARULJOTHI	226106	25	0	274	1.33	1	315	25	4	344	1	1	1	1	95	0	3.25	8	9	0	0
150	VARALAKSHMI	225712	24	1	266	1.75	1	240	20	4	264	1	1	1	1	140	0	2.81	8	9	0	1

KEY TO MASTER CHART

Pain Relief Score

0- No Pain relief

1- Mild Pain Relief

2- Moderate Pain Relief

3- Excellent Pain Relief

Mode of Onset of Labour

1- Spontaneous

2- Induced

Liquor Colour

1- Clear

2- Meconium

3- Blood stained

Ability to cooperative at 2nd stage

1- Able

2- Not able

Maternal Complication

0- No

1- Nausea/vomiting

2- Tachycardia

3- Drowsiness

4- Dryness of mouth

5- Hypersalivation

NICU admission

0- not admitted

1- admitted

Maternal satisfaction score

0- Unsatisfied

1-2 Just satisfied

3 -4 Good satisfaction

5 Excellent Satisfaction

GA Gestational Age

MOD Mode Of Delivery

RCD Rate of Cervical Dilatation